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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

LEIDY SOUTH PROJECT

# WETLAND AND WATERCOURSE DELINEATION REPORT

CLINTON, LUZERNE, LYCOMING, COLUMBIA AND SCHUYLKILL COUNTIES, PENNSYLVANIA

JULY 2019 (REVISED APRIL 2020)

***Prepared by:***

designs, permits, resolutions WHM consulting, INC.

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TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC

LEIDY SOUTH PROJECT

CLINTON, LUZERNE, LYCOMING, COLUMBIA AND SCHUYLKILL COUNTIES, PENNSYLVANIA

WETLAND AND WATERCOURSE DELINEATION REPORT

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WETLAND DELINEATION REPORT

## 1.0 INTRODUCTION

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing the Leidy South Project (Project) which is an expansion of Transco's existing natural gas transmission system and an extension of Transco's system through a capacity lease with National Fuel Gas Supply Corporation that will enable Transco to provide 582,400 dekatherms per day (Dth/d) of incremental firm transportation capacity for abundant supplies of natural gas from northern and western Pennsylvania to existing and growing markets in Transco's Zone 6 (See Attachment A – Project Location Map). Transco's Zone 6 includes the portion of the Transco system in Pennsylvania, New York, New Jersey, and Maryland. The Project consists of the following components:

- 6.3 miles of 36-inch pipeline loop along Transco's Leidy Line in Clinton County, Pennsylvania (Hensel Replacement) and the related abandonment of 5.8 miles of existing 23.375-inch pipeline on Leidy Line A;
- 2.4 miles of 36-inch pipeline loop along Transco's Leidy Line in Clinton County, Pennsylvania (Hilltop Loop);
- 3.5 miles of 42-inch pipeline loop along Transco's Leidy Line in Lycoming County, Pennsylvania (Benton Loop);
- Existing Compressor Station 605 (Wyoming County, Pennsylvania);
    - Increase the total certificated horsepower of the two electric motor-driven units from 30,000 horsepower (HP) to 42,000 HP and modifications to existing coolers;
- New Compressor Station 607 (Luzerne County, Pennsylvania);
    - Install two gas turbine-driven compressor units (23,465 nominal HP at International Organization for Standardization (ISO) conditions each, 46,930 HP total) and gas coolers;
- Existing Compressor Station 610 (Columbia County, Pennsylvania);
    - Add one gas turbine-driven compressor unit (31,871 nominal HP at ISO conditions) and gas cooling;
    - Increase the total certificated horsepower of the two electric motor-driven units from 40,000 HP to 42,000 HP and re-wheel the existing compressors;
- New Compressor Station 620 (Schuylkill County, Pennsylvania);
    - Install one gas turbine-driven compressor unit (31,871 nominal HP at ISO conditions);

- Ancillary facilities, such as mainline valves (MLVs), communication facilities, and pig launchers and receivers in Pennsylvania.

Subject to FERC approval of the Project and receipt of the necessary permits and authorizations, Transco anticipates that construction of the Project will commence in winter 2020/2021 to meet a target in-service date of December 1, 2021.

This report summarizes the results of the wetlands and watercourse delineations (delineations) completed for the Project in Clinton, Luzerne, Lycoming, Columbia, and Schuylkill counties, Pennsylvania by WHM Consulting, Inc. (WHM). Project components occur in Wyoming and however, they did not require delineations due to the nature of the activity proposed at these existing facilities. Appendix A to this report shows the overall Project location map showing each of the previously mentioned Project components.

Wetland delineations were completed on the Project between October of 2018 and June of 2019. Resumes of the staff present during the delineations can be found in Appendix B. In May of 2019, site visits to review the wetland boundaries at various locations was completed with the Pennsylvania Department of Environmental Protection (PADEP) and the United States Army Corps of Engineers (USACE) as part of the preliminary jurisdictional determination (pre-JD) associated with the Project.

This overall narrative summarizes the methodology for the desktop analysis and wetland and watercourse delineation completed from the Project. As appendices to this report, several Project component specific reports are included. In these reports, an introduction to each Project component is provided, as well as the results of the desktop analysis and field surveys. Mapping, photographs, and wetland, upland and watercourse data forms are also provided. The following is a list of the appendices by Project component:

Appendix C: Benton Loop Wetland and Watercourse Delineation Report;
Appendix D: Hilltop Loop Wetland and Watercourse Delineation Report;
Appendix E: Hensel Replacement Wetland and Watercourse Delineation Report;
Appendix F: Compressor Station 607A Wetland and Watercourse Delineation Report;
Appendix G: Compressor Station 620A Wetland and Watercourse Delineation Report;
Appendix H: Compressor Station 610 Wetland and Watercourse Delineation Report.

## 2.0 DESKTOP ANALYSIS

Prior to conducting field investigations, a review of natural resource data associated with the Project site was completed to help establish probable areas where wetlands and watercourses could be located before conducting the onsite field investigation. Specifically, the following information was reviewed:

- U.S. Geologic Survey (USGS) 7.5-minute topographical maps;
- Department of Conservation and Natural Resources (DCNR) PAMAP Program – Topographical Contours (2 ft Intervals);
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI);
- USGS National Hydrography Dataset (NHD);
- Natural Resources Conservation Service (NRCS) web soil survey; and,

- Current and historical aerial imagery.

## 3.0 WETLAND AND WATERCOURSE DELINEATION METHODOLOGY

WHM conducted investigations on the subject Project areas according to the procedures and technical guidelines outlined in the 1987 *USACE Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (April 2012, Version 2.0)* and *Northcentral and Northeast Region (January 2012, Version 2.0)* depending on location. The USACE protocol establishes a three-parameter approach for identification and delineation of wetlands, which includes confirmation of the following:

I. Hydrophytic Vegetation: This condition exists when greater than 50% of the plant species contain obligate (OBL), facultative-wet (FACW), or facultative (FAC) indicator status.

II. Hydric Soils: Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil (Federal Register, July 13, 1994).

III. Wetland Hydrology: Wetland hydrology is recognized through evidence of inundation and/or saturation to the soil surface for at least 5% of the growing season during most years.

In undisturbed conditions, the three parameters must be confirmed to be present to characterize an area as a wetland. In highly disturbed or problematic wetland situations, USACE guidance details procedures to be used for evaluating these areas and determining which areas are most likely considered wetlands upon review by a USACE representative. Upon completing our investigations, areas exhibiting three of the USACE criteria presented above and which also have surface water connection to other waters of the United States are identified as resources that are likely to be regulated by the USACE as Jurisdictional Wetlands. Areas exhibiting three parameters but without surface water connection to other waters were identified as wetlands or waters, but they may or may not be regulated by the USACE. In many cases, wetland areas not regulated by the USACE are still likely to be regulated by the PADEP.

A Cowardin Classification (or multiple Cowardin Classifications) was assigned to each wetland based on the vegetation, sediment type, and hydrological regime. Wetlands were flagged with pink wetland delineation flagging and labeled according to the team number, unique wetland ID, survey point number, and Cowardin classification. Wetlands with multiple Cowardin classifications will be delineated as one wetland and include a delineation of the boundaries of each Cowardin type within the wetland complex. Wetland and upland data points were surveyed at each wetland with data being recorded.

In addition to wetlands, waters likely to be regulated as Waters of the United States, including ephemeral, intermittent and perennial waterways, were identified in the investigation areas. The term “Jurisdictional Waters of the United States” as used by Section 404 of the CWA and defined under 33 Code of Federal Register (CFR) Section 328.1, includes adjacent wetlands

and tributaries to traditionally navigable waters (TNW) and other waters with a hydrological connection to a TNW. The Commonwealth of Pennsylvania defines a watercourse or stream as any channel or conveyance of surface water having a defined bed and banks, whether natural or artificial, with perennial or intermittent flow. The Commonwealth does not regulate ephemeral watercourses which carry water only during storm water runoff events; however, these features were delineated due to the potential USACE jurisdiction.

The waterway type (perennial, intermittent or ephemeral) is noted on the stream data form completed for each delineated water resource. Water resources were flagged with blue delineation flagging and labeled according to the team number, unique stream ID and survey point number. The ordinary high-water mark on each bank (OHWM) or centerline (for waterways under 5 feet in width) were surveyed. The OHWM is defined in Title 33 of the Federal Code as "by observations of water fluctuation, physical characteristics, such as a clear natural line impressed on the bank, shelving, changes in the soil character, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. In streams under 5 feet in width, the proper channel width is included in the area tabulations based on the delineators field notes. In addition, mapping illustrates the appropriate offset of the centerline.

For delineations performed in the Commonwealth of Pennsylvania, wetlands and waters identified during the wetland delineation are deemed probable "Jurisdictional Waters of the United States" until otherwise reviewed and accepted by the USACE and/or PADEP. If upon agency review the wetland or watercourse is determined to be isolated by the reviewers (i.e. has no significant nexus to "Jurisdictional Waters of the United States"), the regulatory body for such waters then becomes the jurisdiction of the PADEP.

Our determinations are based on our collective "best professional judgment" exercised with the guidance of the USACE's manual and supplements. However, the final determination of the Jurisdictional status of the resources identified lies entirely within the review of the reviewing regulatory agencies. In other words, we identify a technically defensible boundary that must either be accepted or adjusted by the reviewing regulatory agencies in situations where encroachments may occur. As wetland consultants / biologists, we do not have the authority to assign regulatory jurisdiction.

Wetlands and waterways were initially surveyed by WHM with a hand-held GeoXH 6000 GPS. WHM then provided the GPS data and sketch mapping to Transco surveyors. Transco then re-surveyed the boundaries with a Trimble GNSS R10 Base and Rover and a Nikon D003451 Total Station. The data was then provided back to WHM for final review and incorporation into overall project mapping and the wetland delineation report.

## 4.0 FUNCTIONAL ASSESSMENT METHODOLOGY

A Functional Assessment was conducted in accordance with the procedures and technical guidelines outlined in the PADEP Level 2 Rapid Assessment Protocols. A desktop analysis was conducted to determine assessment areas (AA) and zones of influence (ZOI) prior to performing the Functional Assessment within the field. Data was collected during the wetland delineation using the field data sheets provided in the protocols. The data sheets were also

used to determine the overall condition index score. In general, the closer the score is to 1, the better the condition of the resource being assessed. The results of the functional assessment will be included for the PADEP permitting.

## 5.0 REFERENCES


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Pennsylvania Department of Environmental Protection (PADEP). 2016a. Pennsylvania Lacustrine Condition Level 2 Rapid Assessment. Version 1.0. Document Number 310-2137-004. Dated August 22, 2016.

Pennsylvania Department of Environmental Protection (PADEP). 2016b. Pennsylvania Riverine Condition Level 2 Rapid Assessment. Version 1.0. Document Number 310-2137-003. Dated September 9, 2016.

Pennsylvania Department of Environmental Protection (PADEP). 2016c. Pennsylvania Wetland Condition Level 2 Rapid Assessment. Version 2.0. Document Number 310-2137-002. Dated August 18 2016.

U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain and Piedmont Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers. 2011. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

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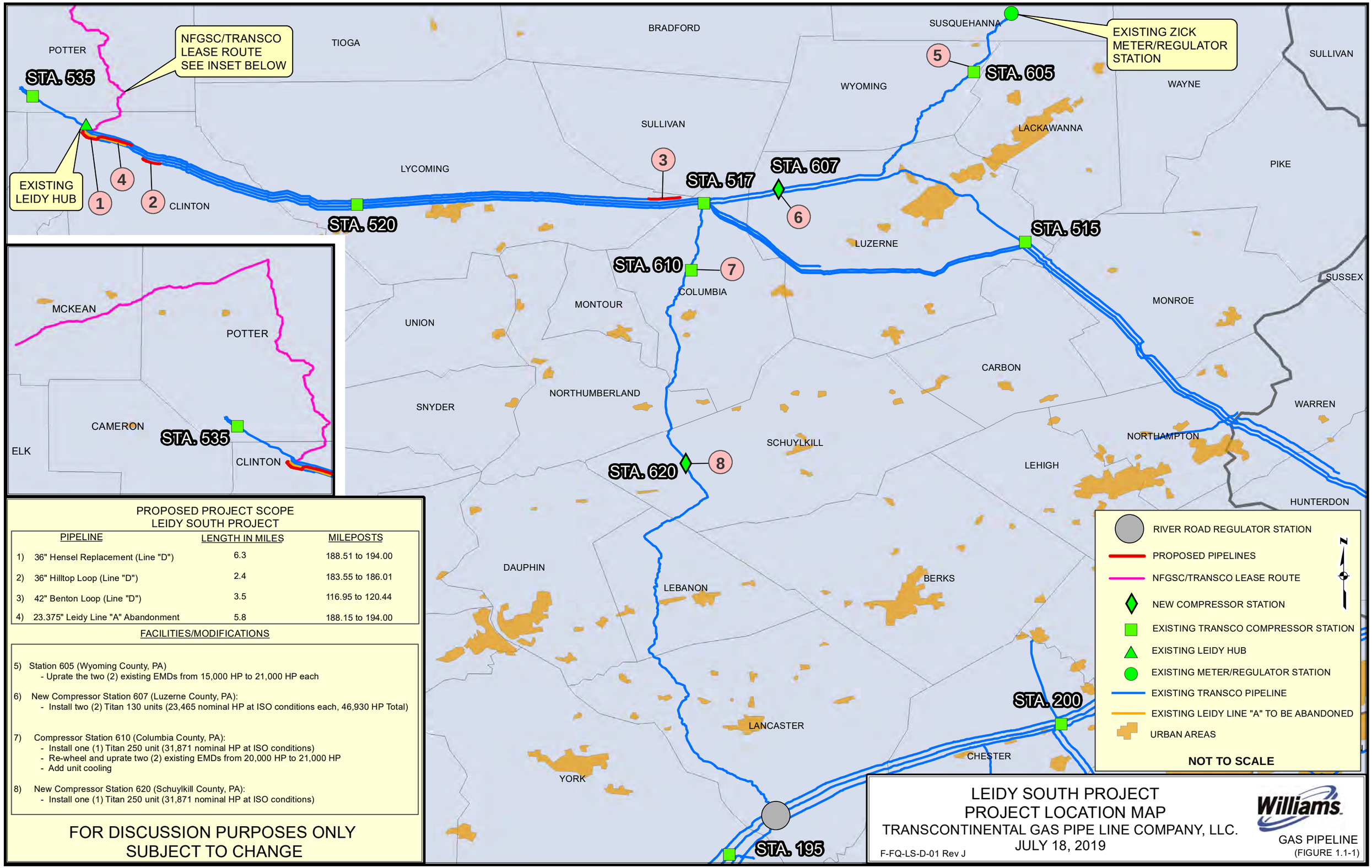
United States Fish and Wildlife Service. National Wetland Inventory Map, 7.5 Minute Series, Pennsylvania.

United States Geological Survey. Topographic Quadrangle 7.5-minute Series Quadrangles, Pennsylvania.

U.S. Geological Survey. 2018. Hydrography: National Hydrography Dataset and Watershed Boundary Dataset. http://nhd.usgs.gov/. Accessed October 12, 2018.

# APPENDIX A

# OVERALL PROJECT LOCATION MAP




PROPOSED PROJECT SCOPE
LEIDY SOUTH PROJECT

| PIPELINE | LENGTH IN MILES | MILEPOSTS |
|---|---|---|
| 1) 36" Hensel Replacement (Line "D") | 6.3 | 188.51 to 194.00 |
| 2) 36" Hilltop Loop (Line "D") | 2.4 | 183.55 to 186.01 |
| 3) 42" Benton Loop (Line "D") | 3.5 | 116.95 to 120.44 |
| 4) 23.375" Leidy Line "A" Abandonment | 5.8 | 188.15 to 194.00 |

FACILITIES/MODIFICATIONS

5) Station 605 (Wyoming County, PA)
- Uprate the two (2) existing EMDs from 15,000 HP to 21,000 HP each

6) New Compressor Station 607 (Luzerne County, PA):
- Install two (2) Titan 130 units (23,465 nominal HP at ISO conditions each, 46,930 HP Total)

7) Compressor Station 610 (Columbia County, PA):
- Install one (1) Titan 250 unit (31,871 nominal HP at ISO conditions)
- Re-wheel and uprate two (2) existing EMDs from 20,000 HP to 21,000 HP
- Add unit cooling

8) New Compressor Station 620 (Schuylkill County, PA):
- Install one (1) Titan 250 unit (31,871 nominal HP at ISO conditions)

FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE

LEIDY SOUTH PROJECT
PROJECT LOCATION MAP
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC.
JULY 18, 2019

F-FQ-LS-D-01 Rev J

Williams
GAS PIPELINE
(FIGURE 1.1-1)

K:\MAPPING\PA\LEIDY\LOOP\0116_18\EXH\Exh\F-FQ-LS-D-01.mxd

# APPENDIX B

# RESUMES

# David Wood, PWS

COMPANY TITLE
*Environmental Specialist*

EDUCATION

- *BA, Environmental Studies, The Pennsylvania State University, 2010: Minor in Biology*

HEALTH & SAFETY CERTIFICATIONS & TRAINING

- *ISN- 02053363*
- *PEC-100794105*
- *Safeland – June 2017*
- *Southwest Energy Training Assurance Program (TAP) – 2015 Core / Supplement – Oct. 2016*
- *Shell Contractor HSE Handbook Sept. 2016*
- *Adult First Aid/CPR– American Heart Association, Pennsylvania – Feb 2016*
- *Energy Transfer Contractor Safety – Feb 2016*
- *NCCER Performance Verifications Oct 2013*
- *AOCFG- Abnormal Operating Conditions-Field NCCER Sept. 2013*
- *Custom Pipeline Inspector NCCER Sept. 2013*
- *OSHA 40 Hour HAZWOPER Training; AllProbe Environmental*
- *Williams Contractor Safety; May 2012*

PROFESSIONAL TRAINING

- *PADEP Technical Workshops - Prepare for The New Aquatic Resource Condition Assessments (Ch. 105) – June 2017*
- *The Wetland Training Institute – Planning Hydrology, Vegetation, and Soils for Constructed Wetlands – July 2016*
- *Swamp School Wetland Wildflowers – June 2016*
- *Swamp School Field Identification of Wetland Sedges, Grasses and Rushes–June 2016*
- *PA Botany Steering Committee - A Consulting Botanist's Toolkit Workshop - Dec. 2015*
- *PAPSS Regional Supplement Hydric Soil Indicators & Wetland Delineation Forms July 2015*
- *PA Botany Steering Committee - A Consulting Botanist's Toolkit Workshop - Dec. 2015*
- *The PNPS (Pennsylvania Native Plant Society)– Identification of Grasses, Sedges, and Rushes*
- *SWS Mid-Atlantic Chapter Wetland Mitigation, Restoration and Ecology State College, PA- April 4-5,2014*
- *Pennsylvania Natural Heritage Program – PNDI Updates Presentation Harrisburg, Pa - Dec. 2013*
- *PA One Call System, Inc. Locater Program – State College, Pa November 2013*
- *FERC "Environmental Review and Compliance for Natural Gas" San Antonio, Texas Sept. 2013*
- *PA DEP ESCGP-2 Training July 10, 2013 State College, PA July 2015*
- *PA SFI® Training; Prof. Timber Harvesting Ess., Wildlife - Young Forest Initiative, Game of Logging - Level 1; May 2012*
- *Marcellus Workshop "An Update on PHMSA Pipeline Regulations & Act 127" Feb. 2012*
- *PASPGP-4 Workshop; Army Corps of Engineers, Baltimore District, October 2011*
- *Regional Supplement to the USACE Delineation Manual, State College, PA – M.N. Gilbert Environmental April 2011*

Mr. Wood has more than has 7 years of professional work experience in natural resources management, wetland sciences, soil science, field biology, and plant sciences. Mr. Wood is a Professional Wetland Scientist (PWS) certified by the Society of Wetland Scientists (SWS). He has coordinated and/or contributed significantly to a wide variety of environmental projects throughout the North Atlantic Region. He has worked in both the public and private sectors for a diverse clientele that include government agencies, non-profit entities, corporations, and individuals.

## CERTIFICATIONS & QUALIFICATIONS

- Professional Wetland Scientist number 2903
- 2018 Wild Plant Management Permit #18-658
- Ohio Rapid Assessment Method (ORAM) Certification - May 2014
- NCCER Craft Instructor Performance Evaluator Certification - Nov. 2013
- 38-Hour training on the "Army Corps of Engineers Wetland Delineation / Waters of the United States Training" - March 2013

## PROFESSIONAL EXPERIENCE

### ENVIRONMENTAL SURVEYS

- Performed Pennsylvania rare, threatened and endangered plant surveys and reporting.
- Assisted on several USFWS endangered plant surveys for *Scirpus ancistrochaetus and Isotria medeoloides* with several surveys resulting in the identification of *S. ancistrochaetus*;
- Field assistant on multiple Timber Rattlesnake Phase I and II surveys and Allegheny Wood Rat surveys;
- Performed macroinvertebrate sampling; and
- Forest inventory and assessments.

### WATER RESOURCE PROJECTS

- Performed water resource delineations and reporting, and performed wetland and stream mitigation monitoring and reporting;
- Conducted wetland and riparian buffer mitigation construction and planting oversite on various mitigation projects throughout Pennsylvania;
- Conducted wetland and stream mitigation monitoring and reporting.
- Collected water samples and onsite water quality data.

### ENVIRONMENTAL PERMITTING

- Produced mitigation plans for wetland and stream impacts, including grading plans, vegetative design, vegetative planting zones, enhancement species lists;
- Performed Erosion and Sediment control inspections on gas well sites and pipeline right-of-ways;
- Assisted with a variety of environmental permitting projects; and
- Conservation Methods Storm Waste Water Wetlands;

### EQUIPMENT AND MAPPING

- Perform task utilizing Trimble surveying equipment; and
- Utilize GIS software for mapping and data analysis.

# Jim Haney, PWS

COMPANY TITLE

*Project Manager*

EDUCATION

- *BS, Environmental Resource Management - The Pennsylvania State University, 2008*

CERTIFICATIONS

- *Professional Wetland Scientist – PWS Seal #: 2509*
- *NRCS Technical Service Provider – Wetlands (Interdisciplinary) Biological Components, Pennsylvania TSP#: 15-16310*

HEALTH & SAFETY CERTIFICATIONS & TRAINING

- *PEC - 100555383*
- *ISN-03232988*
- *Shell Contractor HSE Handbook Sept. 2016*
- *Energy Transfer Contractor Safety Orientation – February 2016*
- *Southwest Energy Training Assurance Program (TAP) – 2015 Supplement, – February 2016*
- *Southwest Energy Training Assurance Program (TAP) 2015 – Core, – February 2016*
- *8 Hour HAZWOPER Refresher Training – AllProbe Environmental – March 2015*
- *Adult First Aid/CPR/AED Training – American Red Cross, Pennsylvania – February 2015*
- *SafeLandUSA Safety Training – PEC Safety – Pennsylvania – July 2014*

PROFESSIONAL TRAINING

- *PADEP Technical Workshops - Prepare for The New Aquatic Resource Condition Assessments (Ch. 105) – June 2017*
- *Applied Fluvial Geomorphology - Wildland Hydrology, Sheperdstown, WV– April 2016*
- *USACE & PA DEP "Pipeline Permitting and Restoration Seminar" – Marcellus Shale Coalition, Pennsylvania – November 2014*
- *Vegetation Identification for Wetland Delineation Rutgers University, New Jersey – June 2012*
- *Hydrology of Wetlands – Rutgers University, New Jersey – May 2012*
- *Methodology for Delineating Wetlands – Rutgers University, New Jersey – November 2011*
- *Riparian Buffer Design Workshop – Berks County Conservation District, Pennsylvania – March 2011*
- *"Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual": PAPSS, DCNR Bureau of Forestry, Laporte, PA – April 2010*

Jim Haney has over 9 years experience with wetland delineation and evaluation, stream restoration, permitting, and environmental monitoring in accordance with national, state, and local criteria and guidelines. Mr. Haney is a Professional Wetland Scientist (PWS) certified by the Society of Wetland Scientists (SWS) that manages the wetland delineation, permit preparation, and agency coordination for projects for WHM. Also, Jim is a certified Technical Service Provider (TSP) for the Natural Resources Conservation Service (NRCS) providing Wetlands (Interdisciplinary) Biological Components assistance to landowners in the state of Pennsylvania.

Additionally, Mr. Haney, specializes in stream restoration, including the survey and design aspects of these projects. Jim regulary works with various watershed organizations, townships and municipalities, non-profit organizations, engineering firms, energy companies, and state and federal agencies.

## PROFESSIONAL EXPERIENCE

### ENVIRONMENTAL PERMITTING

- Completed local, state, and federal environmental permitting for various types of development and water quality projects, which included detail studies/reports and thorough coordination with regulatory agencies; and
- Coordinated threatened and endangered species surveys through the Pennsylvania Natural Diversity Index (PNDI) program, including Pennsylvania Historical and Museum Commission (PHMC) coordination, with national and state agencies, as well as certified biologists.

### WATER RESOURCE PROJECTS

- Completed and assisted with wetland and stream mitigation plans, including designs, in accordance with USACE's *Compensatory Losses of Aquatic Resources* guidance document;
- Delineated or overseen delineations for stream and wetland delineations on more than 300 miles of utility line corridors, as well as numerous land development projects;
- Has helped conduct route development, including crossing locations of stream and wetland features as well as access road placement for utility line corridors;
- Conducted surveys of a number of impaired streams, assisted in creating restoration designs, and conducted as-built surveys of restoration projects;
- Has served as construction oversight and made necessary in field adjustments on more than 3,500 feet of stream restoration projects;
- Has performed Pennsylvania Level 2 Rapid Assessment Protocols for Riverine and Wetland systems to calculate impacts and functional gain for development and mitigation projects;
- Conducted and oversaw post-construction monitoring program as part of special conditions required by Joint Permit approvals;
- Conducted water quality analysis's including: macroinvertebrate sampling and identification and habitat assessment;
- Utilized GPS units for obtaining accurate field data collection and producing detailed mapping for projects; and
- Utilized total station and laser level surveying equipment to obtain longitudinal and cross section profiles of impaired streams and as-built restoration projects.

COMPANY TITLE

*Environmental Technician*

EDUCATION

- *B.S. Environmental Resource Management, the Pennsylvania State University, 2010*

HEALTH & SAFETY CERTIFICATIONS & TRAINING-

- *ISN-03894196*
- *Atlantic Sunrise safety training – September 2017*
- *Kinder Morgan Safety Orientation – October 2017*
- *Adult First Aid/CPR– American Heart Association, Pennsylvania – June 2015*
- *OSHA 40 Hour HAZWOPER Training; All Probe Environmental; October 2017*

PROFESSIONAL TRAINING

- *Stream Habitat and Measurements Techniques – National Conservation Training Center – Sheperdstown, WV, March 2017*
- *FWS Geospatial Workshop – National Conservation Training Center – Sheperdstown, WV, March 2016*
- *Overview of Wetland Delineation Protocols and the Interim NC/NE Regional Supplement to the USACE Delineation Manual – State College, PA, April 2011*

# Curtis George

Curtis George graduated from the Pennsylvania State University with a B.S. degree in Environmental Resource Management and minors in Watershed and Water Resource Management and Wildlife and Fisheries sciences. Throughout his career, Curtis has worked with private, state and federal agencies to gain experience performing a wide range of biological tasks throughout the United States. He has a background with wetlands and watershed management and has gained lots of knowledge performing surveys and using GIS software.

## PROFESSIONAL EXPERIENCE

ENVIRONMENTAL EXPERIENCE

- Led wetland crews to perform wetland delineations for proposed construction sites;
- Participated in surveys of biological and physical parameters for stream restoration projects;
- Performed construction oversight for wetland creation projects;
- Performed a variety of biological surveys for birds, macroinvertebrates, herps, fish and plants;
- Controlled invasive plants and animal species using both manual and chemical means;
- Raised fish for stocking in state waterways;
- Contributed to report writing and permit preparation;
- Performed post construction monitoring on various oil and gas related projects.

MAPPING AND SURVEYING

- Used survey grade Trimble equipment to perform RTK elevation surveys for various biological and resiliency projects.
- Performed bathymetry surveys for creating sediment and water movement models;
- Utilized GIS software to create maps for various projects and to manipulate survey data;
- Performed surveys and tasks using Trimble Juno Series and GeoHX handheld GPS units;
- Used various GPS units to navigate the back country.

COMPANY TITLE

*Environmental Specialist*
*Health and Safety Officer (HSO)*

## EDUCATION

- *Environmental Soil Science, Bachelors of Science, The Pennsylvania State University, University Park, Pennsylvania, 2009*

## CERTIFICATIONS

- *Professional Wetland Scientist #2560*
- *Maryland Department of the Environment Erosion & Sediment Control Responsible Person Certification #RPC010292*

## PROFESSIONAL TRAINING

- *PADEP Technical Workshops - Prepare for The New Aquatic Resource Condition Assessments (Ch. 105) – June 2017*
- *Identification of Wetland Wildflowers, Swamp School, LLC - June 2016*
- *SWS Mid-Atlantic Chapter Dr. Robert Brooks of Penn State University and Riparia on Using Natural Reference Wetland Data for Wetlands Mitigation and Restoration Projects, State College, PA- April 4-5,2014*
- *Ohio Rapid Assessment Method for Wetlands v. 5.0 2014 Training Course, April 2015*
- *PA DEP ESCGP-2 Training July 2013 State College, PA*
- *E&S Manual Training – Scranton, PA - PA Association of Conservation Districts - May 2013, at the Hilton Scranton & Conference Center*
- *Hydric Soil Indicators Field Seminar April 2013 PASS-Stoll Natural Resources Center, Wysox, PA*
- *Primary Headwater Habitat Assessment Training – West Woods Metro Park, Geauga County, Ohio May 2012*
- *"Planning Hydrology for Constructed Wetlands", Wetland Training Institute, State College, PA November 2011*
- *"Grasses, Sedges, and Rushes" Pennsylvania Institute for Conservation Education, Shavers Creek Environmental Center, Huntingdon, PA August 2011*
- *Hydrology of Wetlands Rutgers University – New Jersey Agricultural Experiment Station Tuckerton, New Jersey May 2011*
- *"Functional Assessment as the Basis for Mitigation of Wetland Impacts", State College, PA – M.N. Gilbert Environmental April 2011*
- *ACOE Wetland Delineation/Regional Supplement Training Richard Chinn State College, March 2010*

# Paul Fisher, PWS

Mr. Fisher is a graduate from The Pennsylvania State University in 2009, where he was awarded a Bachelors degree in Environmental Soil Science. Mr. Fisher is a Professional Wetland Scientist (PWS) certified by the Society of Wetland Scientists (SWS) that manages field and wetland crews for WHM. Mr. Fisher has over 8 years of professional experiennce with GIS Analysis and Mapping, environmental permitting, wetland delineations, stream assessments, pipeline routing, wetland mitigation, functional assessments, ORAM, riparian planting, project management and oversite.

Mr. Fisher is also the Health and Safety Officer at WHM responsible for the development and implementation the corporate Health and Safety Plan. He maintains safe working environments, establishes effective best practices, prevention measures, and rapid response processes. Mr. Fisher specializes in protecting workers, assets and the community in the most cost-effective manner.

## PROFESSIONAL EXPERIENCE

GENERAL ENVIRONMENTAL PROJECTS

- Used GIS software for mapping and analysis;
- Used a Trimble GPS for mapping boundaries for mapping purposes;
- Composed various Environmental Reports for landfills, gas companies, wind farms, construction companies, private landowners, and regulatory agencies;
- Performed land analysis's using GIS Software for determining suitable areas for development; and
- Completed various Environmental Permits for clients.

ENVIRONMENTAL PROJECTS

- Performed wetland monitoring and maintenance on various wetlands;
- Performed Stream Surveys;
- Practiced wetland delineations using US Army Corps of Engineers Wetlands Delineation Manual 1987 and applicable regional supplements;
- Used the Pa Code Chapter 93 Water Quality Standards and Chapter 105 Dam safety and Waterway Management;
- Used surveying equipment to characterize stream profiles for mapping and design purposes;
- Delineated wetlands and water resources at several projects throughout Pennsylvania, Ohio and West Virginia; and
- Managed several wetland projects in Pennsylvania and Ohio.

HEALTH & SAFETY CERTIFICATIONS & TRAINING

- PEC - 100794102
- ISN- 02053343
- Safeland September 2016
- Shell Contractor HSE Handbook Sept. 2016
- OSHA Safety Training Working in Wetlands, Swamp School, LLC – April 2016
- Oil & Gas Safety & Health Professional Certification Feb. 2016
- Adult First Aid/CPR– American Heart Association, Pennsylvania – Feb 2016
- Energy Transfer Contractor Safety Orientation Instructor Dec. 2015
- NCCER Craft Instructor Performance Evaluator Certification October 2013
- Southwestern Energy Training Assurance Program Instructor Certification Oct. 2013
- NCCER Performance Verifications Feb. 2013 - PV151 15.1 - PV152 15.2 - PV320 32.0
- AOCFG- Abnormal Operating Conditions- Field NCCER Sept. 18, 2013
- Custom Pipeline Inspector NCCER Sept. 2013
  - Task 15 - 15.1, 15.2 & Task 32
- OSHA 40 Hour HAZWOPER Training; All Probe Environmental; June 2013
- Occupational Safety and Health Professional Certification May 2012
- Williams Contractor Safety; May 2012

COMPANY TITLE

*CAD Technician/Environmental Technician*

EDUCATION

- *BA, Anthropology; Journalism, Public Relations, & Advertising, Temple University, 2008*

HEALTH & SAFETY CERTIFICATIONS & TRAINING

- *PEC - 100794100*
- *ISN- 02365544*
- *Energy Transfer Contractor Safety Orientation Dec. 2016*
- *Southwestern Energy (SWN) Training Assurance Program (TAP) Oct. 2016*
- *Shell Contractor HSE Handbook Sept. 2016*
- *Safeland September 2016*
- *Adult First Aid/CPR– American Heart Association, Pennsylvania – Feb 2016*
- *OSHA 24 Hour HAZWOPER Training; All Probe Environmental; July 2014*

PROFESSIONAL TRAINING

- *AutoCAD Civil 3d Training; Print-O-Stat, Inc. Software Solutions Division June 2017*
- *AutoCAD Civil 3d 2017 Introduction, CAD Advisers June 2016*
- *Pennsylvania Association of Professional Soil Scientists Hydric Soils Indicators – Field Seminar and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region July 15-16, 2015*
- *Federal Energy Regulatory Commission Environmental Review and Compliance for Natural Gas Facilities Seminar Memphis, TN Feb. 10-12, 2015*
- *38 Hour Army Corps of Engineers Wetland Delineation Training, Richard Chinn Environmental Training, Inc. March 10-13, 2014*
- *Pennsylvania Association of Professional Soil Scientists Hydric Soils Indicators – Field Seminar and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region April 2013 Bradford County Conservation District Wysox, PA*
- *Minnesota Department of Natural Resources Project Management Leadership February 2011 St Paul, MN*
- *Alaska State and National Parks Safe Hand Tool Use and Maintenance June 2008 Anchorage, AK*

# Carissa Butler

Miss Butler graduated from Temple University with degrees in Anthropology and Journalism, Public Relations, and Advertising. Since graduation, she has worked on resource restoration projects with natural resource professionals in Alaska, Minnesota, and Pennsylvania. She has been associated with numerous projects at many different levels and has gained a vast knowledge of all aspects of environmental permitting. She gained skills through her previous experiences and WHM Consulting, Inc. in various environmental projects dealing with water quality, habitat restoration, and land use. As a CADD and GIS Technician for WHM, she is responsible for developing and maintaining geographic, political and environmental databases that are pertinent to the region.

## PROFESSIONAL EXPERIENCE

### MAPPING AND SURVEYING

- Plan, design, draft and analyze topographic plans and details using AutoCAD Civil 3D 2013 for various projects utilizing field collected data and other associated data;
- Used GIS software for compiling field collected data, land use data, tabular data, and other data to produce figures for analysis and to calculate statistics of various environmental projects;
- Utilized GPS units for surveying various points and boundaries for mapping purposes;
- Performed land analysis's using GIS Software for determining suitable areas for development based on environmental parameters; and
- Performed surveys and tasks using Trimble Juno Series and GeoHX handheld GPS units.

### ENVIRONMENTAL TECHNICIAN

- Provided on the ground project management and implementation for a variety of trail building and maintenance projects in central and southeast Alaska;
- Assisted with a variety of environmental permitting projects;
- Performed water resource delineations and reporting, and performed wetland and stream mitigation monitoring and reporting;
- Led quality control teams on previously blasted seismic testing areas in Pennsylvania State Forests and Game Lands;
- Developed curriculum and led in-field and classroom trainings and workshops on hand tool use and maintenance, science and environmental education, leadership skills, safety and risk management, and wilderness survival;
- Performed invasive species assessment and removal;
- Assisted with juvenile fish surveys via electro fishing and trapping;
- Worked on Alaska DOT and Alaska Moose Federation projects, accessing vegetative conditions surrounding highway features and employing corrective measures to facilitate safer conditions for motorists and the Alaska moose population;
- Led Alaskan native youth on backcountry camping trips and habitat restoration projects; and
- Experienced grant and proposal writer.

COMPANY TITLE

*Project Manager*

EDUCATION

- *BA, Environmental Studies, The Pennsylvania State University, 2006*

CERTIFICATIONS

- *Professional Wetland Scientist #2285*

HEALTH & SAFETY CERTIFICATIONS & TRAINING

- *PEC - 100794096*
- *ISN- 02053332*
- *Energy Transfer Contractor Safety Orientation Dec. 2016*
- *Southwestern Energy (SWN) Training Assurance Program (TAP) Oct. 2016*
- *Shell Contractor HSE Handbook Sept. 2016*
- *Safeland September 2016*
- *OSHA 40 Hour HAZWOPER Training; All Probe Environmental; October 2016*
- *Adult First Aid/CPR– American Heart Association, Pennsylvania – Feb 2016*
- *Williams Contractor Safety; May 2012*

PROFESSIONAL TRAINING

- *PADEP Technical Workshops - Prepare for The New Aquatic Resource Condition Assessments (Ch. 105) – June 2017*
- *PASPGP-5 Training, Marcellus Shale Coalition, Hershey PA – July 2016*
- *Chapter 102/NPDES Training Centre & Clinton County Conservation Districts, March 2016*
- *PADEP ESCGP-2 Permit Training, State College, PA July 2013*
- *Planning Hydrology, Vegetation, and Soils for Constructed Wetlands – The Wetland Training Institute; State College, PA – Sept 10-12, 2012*
- *Erosion & Sediment (E&S) Manual Training (Northampton Co) by the PACD in conjunction PADEP August 20, 2012*
- *Primary Headwater Habitat Assessment Training – West Woods Metro Park, Geauga County, Ohio, May 23, 2012*
- *"Functional Assessment as the Basis for Mitigation of Wetland Impacts State College, PA – M N Gilbert Environmental April 2011*
- *PaDEP—Technical Review of the revised Chapter 102 Regulations, Penn Tech Campus, Williamsport, PA – Dec. 2010*
- *"Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual": PAPSS, DCNR Bureau of Forestry, Laporte, PA - April 2010*
- *Department of Environmental Protection "Regulatory Requirements Seminar for Marcellus Shale"; Harrisburg, PA - March 2010*
- *Wetland Delineator Training, Institute for Wetland & Environmental Education & Research, Inc, Tiner and Veneman, Albany, New York – July 2008*
- *Plant ID: Wetlands & Their Borders, Institute for Wetland & Environmental Education & Research, Inc, Albany, New York - July 2008*
- *DEP Stormwater Best Management Practices Manual Training Session, State College, Pennsylvania - May 2007*

# Kevin Clark, PWS

Mr. Clark has over 12 years experience with wetland delineation and evaluation, permitting, mitigation design, and the preparation/management of environmental compliance documents in accordance with federal, state, and local criteria and guidelines. He is a Professional Wetland Scientist (PWS) certified by the Society of Wetland Scientists (SWS). He manages the design and construction of habitat and wetland restoration, enhancement and replacement projects. Additionally, he specializes in environmental permitting for land development projects with experience in Pennsylvania, West Virginia, Ohio and Maryland. He has continuously gained skills through his work experience and interaction with regulatory agencies. Currently, Mr. Clark manages a variety of land development and mitigation projects.

## PROFESSIONAL EXPERIENCE

### ENVIRONMENTAL SURVEYS & PERMITTING

- Project Management of land development projects requiring local, state and federal permit authorizations with an emphasis on energy related infrastructure, landfills and wetland/stream mitigation.
- Completed and managed small to large scale delineations throughout the in PA, OH, WV, and MD in accordance with 1987 USACE Wetland Delineation Manual and applicable regional supplements;
- Oversee subcontractors and internal personnel associated with wetland and stream restoration/mitigation projects, threatened and endangered species surveys, and archeological surveys;
- Utilized survey-grade GPS units for high accurate field data collection to produce detailed mapping;
- Proficient in providing detailed mapping and design drawings utilizing AutoCAD and ArcGIS software;
- Completed numerous watershed assessments to determine point and non-point Performed and/or managed wetland delineations
- Client and regulatory liaison for projects involving land development and environmental restoration.

### WATER RESOURCE RESTORATION/MITIGATION PROJECTS

- Responsible to property acquisition of potential water resource mitigation projects;
- Completed over 100 wetland and stream mitigation plans, including design and permitting in accordance with USACE's *Compensatory Losses of Aquatic Resources* guidance document;
- Manages construction oversight and monitoring of wetland and stream restoration/mitigation projects in accordance with applicable permit conditions;
- Completed watershed assessments and restoration plans;
- Conducted water quality analysis's including: water sampling, macroinvertebrate sampling/identification and general habitat assessment;
- Managed numerous Growing Greener, Chesapeake Bay Small Watershed Grant and other grants associated with stream restoration for non-profit organizations and county conservation districts;

### CONFERENCES & SEMINARS

- Federal Energy Regulatory Commission (FERC) Environmental Seminar, Marcellus Shale Coalition, State College, PA – May 2017
- Southern Gas Association (SGA) Technical Conference on Environmental Permitting & Construction, Dallas TX – Feb. 2017
- National Mitigation & Ecosystem Banking Conference, Fort Worth, TX – May 2016
- FERC "Environmental Review and Compliance for Natural Gas Facilities Seminar" Tampa, Florida – Dec. 2015
- SWS Mid-Atlantic Chapter Wetland Mitigation, Restoration and Ecology State College, PA – April 2014

# Ryan Nelson, PWS

COMPANY TITLE

*Project Manager*

EDUCATION

- *B.S., Environmental Resource Management, with minors in Watershed/Water Resources and Environmental Soil Science The Pennsylvania State University, 2008*

CERTIFICATIONS

- *Professional Wetland Scientist (PWS) PWS Seal # 2412*

PROFESSIONAL TRAINING

- *ESCGP-2 to ESCGP-3: New PA DEP Reviewer Process and Permit Implementation Seminar; Marcellus Shale Coalition; December 13, 2017*
- *PADEP Technical Workshops - Prepare for The New Aquatic Resource Condition Assessments (Ch. 105) – June 2017*
- *PADEP MS4 Workshop, Harrisburg PA – Sept. 2016*
- *PHMSA's Proposed Rules for Natural Gas, Kinetic Pittsburgh, PA – Aug. 2016*
- *PA Marcellus Shale Coalition, PASPGP-5 Training, Hershey PA July 2016*
- *Identification of Wetland Wildflowers, Swamp School, LLC – June 2016*
- *"River Assessment & Monitoring" May 9-19, 2016 at the National Conservation Training Center Shepherdstown, WV*
- *Chapter 102/NPDES Training for Consultants and Engineers held by Clinton and Centre County Conservations Districts and PADEP – March 2016 – State College, PA*
- *PA DEP ESCGP-2 Training July 10, 2013 State College, PA*
- *Erosion & Sediment (E&S) Manual Training (Northampton Co.) by the PACD in conjunction PADEP August 20, 2012*
- *"Functional Assessment as the Basis for Mitigation of Wetland Impacts - Overview and Discussion", State College, PA – M.N. Gilbert Environmental April 2011*
- *PaDEP—Technical Review of the revised Chapter 102 Regulations, Harrisburg, PA, February 2011.*
- *Natural Channel Design Review Methodology: U.S. Fish & Wildlife Service National Conservation Training Center, Shepherdstown, WV October 2010*
- *"Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual": PAPSS, DCNR Bureau of Forestry, Loyalsock State Forest Resource Mgt Center, Laporte, PA April 2010*
- *Stream Restoration: Elements of Design Workshop II University Park, PA. August 2008*

.

Mr. Nelson is a Professional Wetland Scientist (PWS) certified by the Society of Wetland Scientists (SWS) that manages the design, permitting, and construction of stream and wetland restoration projects and land development projects for WHM. He has experience dealing with water encroachment permitting, erosion and sediment control, wetland delineations, stream assessments, GIS Analysis and Mapping, and Project Management. He has continuously gained skills through his academic and work experience in various environmental projects dealing with water quality, land development, aquatic resource mitigation and restoration, and currently oversees a variety of development projects.

Mr. Nelson has been professionally trained by Wildland Hydrology in Rosgen's Natural Channel Design and is certified in Levels I, II and III - "Applied Fluvial Geomorphology", "River Morphology & Applications", and "River Assessment & Monitoring.

## PROFESSIONAL EXPERIENCE

ENVIRONMENTAL PROJECT MANAGEMENT

- Oversee permitting of development projects, including pipelines, wind power generation, landfills and aquatic resource mitigation/restoration;
- Environmental Permitting for the PA DEP and U.S. Army Corp of Engineers including, but not limited to NPDES, E&S Plans, Joint Permits, and General Permits;
- Threatened & Endangered Species and Cultural Resource consultation for land development projects, including state and federally sensitive resources; and
- Client and regulatory liaison for projects involving land development and environmental restoration.

WETLAND AND STREAM PROJECTS

- Collected and analyzed data associated with stream restoration projects including, Stream Profile and Cross section data, bar sampling, pebble counts, and bathymetric data;
- Construction oversight of multiple stream restoration projects involving channel stabilization and rebuild;
- Performed wetland and stream delineations in PA, OH, and WV; and
- Performed wetland monitoring and maintenance on mitigation wetland sites.

MAPPING AND SURVEYING

- Used GIS software for compiling field collected data, land use data, tabular data, and other data to produce figures for analysis and to calculate statistics of various environmental projects;
- Utilized GPS units for surveying various points and boundaries for mapping purposes, including wetland delineations;
- AutoCAD mapping for various projects, including stream restoration and wetland mitigation projects, utilizing field collected data and other associated data;
- Use of survey equipment and AutoCAD Software in characterizing pre and post construction conditions for mapping and design purposes on various projects including stream stabilization, wetland mitigation, and other aquatic resource related projects.

BIOLOGICAL SURVEYS

- Completed and managed studies for the USFWS, DCNR, PGC, and the PFBC for rare, threatened, endangered, and species of special concern within the purview of all the above agencies.

CONFERENCES & SEMINARS

- Federal Energy Regulatory Commission (FERC) Environmental Seminar, Marcellus Shale Coalition, State College, PA - May 2017
- Southern Gas Association (SGA) "Technical Conference on Environmental Permitting & Construction" Dallas, TX Feb. 22-24, 2017
- FERC Environmental Review and Compliance for Natural Gas Facilities Seminar - Tampa, Florida – Dec 2015
- Seminar for Hardwood Forest Reforestation on Abandoned Mine Sites. Ebensburg, Pennsylvania, June 2007

# Philip R. Dunning

COMPANY TITLE

*Timber Rattlesnake & Woodrat Surveyor*

EDUCATION

- *M.S. Biological Science, East Stroudsburg University 2007*
- *B.S. Wildlife and Fisheries Sciences, Pennsylvania State University 2003*

CERTIFICATIONS

- *Pennsylvania Fish & Boat Commission Approved Timber Rattlesnake Surveyor and Construction Site Monitor*
- *NJ Approved Primary Venomous Snake Monitor*

HEALTH & SAFETY CERTIFICATIONS & TRAINING

- *ISN- 03232972*
- *40 Hour HAZWOPER – March 2016*
- *Energy Transfer Contractor Safety Orientation - December 2016*
- *Southwest Energy Training Assurance Program (TAP) – 2015 Core and Supplement – December 2016*
- *Shell Contractor HSE Handbook Sept. 2016*
- *Adult First Aid/CPR– American Heart Association, Pennsylvania – February 2016*

PROFESSIONAL TRAINING

- *Army Corps of Engineers Wetland Delineation / Regional Supplement / Waters of the United States Training – April 2016*

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Mr. Dunning is recognized by the Pennsylvania Fish & Boat Commission as a Qualified Timber Rattlesnake Surveyor and by the New Jersey Endangered and Threatened Species Program as a Qualified Timber Rattlesnake Biologist and Surveyor. He specializes in surveys and studies of threatened and endangered species, general herpetological surveys, endangered mammal surveys, biological/ecological assessments, and natural resource inventories. He is also experienced in vernal pool surveys, Bog Turtle Surveys, presence/absence determination, and macro invertebrate sampling.

**PROFESSIONAL EXPERIENCE**

TIMBER RATTLESNAKE EXPERIENCE

- Oversee Timber Rattlesnake Projects;
- Led/supervised/managed phase I, II and III timber rattlesnake surveys throughout Pennsylvania and New Jersey;
- Completed and submitted final technical proposals and reports related to phase I, II and III surveys and studies;
- Published presentation abstracts and popular articles in scientific journals or newsletters;
- Conducted timber rattlesnake construction monitoring projects; and
- Timber Rattlesnake Historic Den Assessments.

OTHER RELEVENT EXPERIENCE

- Natural Environment Inventories and Analysis;
- Endangered Species Surveys;
- Qualified New Jersey Primary Venomous Snake Monitor;
- Northern Copperhead Habitat Field Work;
- Northern Copperhead Trapping for Telemetry Project;
- Bog Turtle Phase I Habitat Assessments;
- Bog Turtle Phase II Physical Surveys and Trapping Services;
- Wetland Assessments and Delineations;
- Phase I and Phase II Timber Rattlesnake Survey Crew Leader;
- Phase I Allegheny Woodrat Surveys;
- Presence/Absence surveys for Small-footed Myotis;
- Bat Mist-Netting Technician;
- Southern Hognose, Canebrake, Pine Snake Radio Tracking;
- Whip-poor-will and Chuck-Will's-Widow Point Call Survey; and
- Macro-Invertebrate Sampling.

# APPENDIX C

# BENTON LOOP WETLAND AND WATERCOURSE DELINEATION REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX C
BENTON LOOP WETLAND AND WATERCOURSE DELINEATION REPORT

JORDAN TOWNSHIP, LYCOMING COUNTY AND JACKSON TOWNSHIP, COLUMBIA COUNTY, PENNSYLVANIA

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- 2.3 National Wetland Inventory
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- 3.2 Waterways

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- .... Wetland, Upland and Waterway Data Forms

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C Pennsylvania Level 2 Rapid Assessment Report

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX C
BENTON LOOP WETLAND AND WATERCOURSE DELINEATION REPORT

JORDAN TOWNSHIP, LYCOMING COUNTY AND JACKSON TOWNSHIP
COLUMBIA COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Transco) to conduct a delineation of wetland and water resources associated with the Benton Loop (Project) located in Jordan and Jackson Townships, Lycoming and Columbia Counties, Pennsylvania (Figure 1 – Project Location Map). The purpose of this investigation was to determine whether regulated wetlands and waters exist within the subject project area in accordance with U.S. Army Corps of Engineers (USACE) guidelines which as regulated under Section 404 of the Clean Water Act (CWA) and Pa Code 25 Chapter 105. This report provides information on the desktop analysis, data collected, delineation field findings, and results pertaining to wetland and water resources identified in the study area. The delineation was performed in October 2018, April 2019 and May 2019.

# 2.0 DESKTOP ANALYSIS

Prior to conducting field investigations, a review of natural resource data associated with the investigation area was completed to help establish probable areas where wetlands and watercourses could be located before conducting the onsite field investigation. The following sections outlined specific data reviewed for the investigation area.

## 2.1 USGS TOPOGRAPHIC AND LiDAR DATA

The 7.5-minute USGS quadrangles for Sonestown, Lairdsville, Benton and Elk Grove, Pennsylvania, were reviewed in the vicinity of the project area. For more detailed topographic information, PAMAP LiDAR (2-foot Intervals) was reviewed to determine slope breaks and microtopography that could result in wetlands and/or waterways.

## 2.2 AERIAL PHOTOGRAPHY

Multiple sources of online accessible current and historical aerial imagery were reviewed. In particular, leaf-off aerial imagery was evaluated for saturation that may persist long enough into the growing season to create wetland conditions.

## 2.3 NATIONAL WETLAND INVENTORY

The U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) mapping within and surrounding the project area is presented in Figure 2 - USDA-NRCS Soils and NWI Map. According to NWI mapping there are no NWI wetlands located within the investigation area.

## 2.4 USDA/NRCS SOIL DESCRIPTIONS

The soil associations onsite are identified through the soil map units mapped by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) in the Soil Survey of Lycoming County, Pennsylvania. In addition, the hydric soils list for Lycoming County was reviewed to determine if these soils are Hydric Soils or contain Hydric Inclusion. There are 12 soil mapping units located within the investigation area. Each soil series and their hydric rating is provided in Table 2-1.

| Soil Mapping Unit | Map Unit Name | Slope (%) | Hydric Soil/ Hydric Inclusion |
|---|---|---|---|
| AbB | Albrights silt loam | 3 to 8 | Yes |
| AbC | Albrights silt loam | 8 to 15 | Yes |
| Ho | Holly silt loam | 0 to 3 | Yes |
| KlB | Klinesville shaly silt loam | 3 to 8 | Yes |
| KlC | Klinesville shaly silt loam | 8 to 15 | Yes |
| KlD | Klinesville shaly silt loam | 15 to 25 | No |
| LaC | Lackawanna channery silt loam | 8 to 15 | No |
| LkB | Leck Kill channery silt loam | 3 to 8 | No |
| LkC | Leck Kill channery silt loam | 8 to 15 | No |
| LkD | Leck Kill channery silt loam | 15 to 25 | No |
| WkE | Weikert and Klinesville shaly silt loams | 25 to 80 | No |
| WlC | Wellsboro channery silt loam | 8 to 15 | No |

Table 2-1: Soil Mapping Unit and Hydric Soils Listing

## 3.0 RESULTS

After the completion of a desktop analysis, a formal wetland delineation was completed. Areas exhibiting the potential for regulated wetlands and waters were evaluated to determine whether they satisfied the USACE and/or PADEP requirements. Attachment A includes specific information for each resource including: wetland delineation mapping, photographic documentation, and data forms. Attachment B – Wetland and Water Resource Summary Tables, provides specific information for each resource identified within the investigation area. The Pennsylvania Level 2 Rapid Assessment Report is provided in Attachment C. The following sections provide a brief summary of the resources identified within the investigation area.

### 3.1 WETLANDS

In total, 35 wetlands were identified during the delineation. Most of the wetlands identified had been previously impacted during past projects within the existing ROW. Wetland were defined as either “Other” or “Exceptional Value” based on Pa Code Title 25, Chapter 105.17 – Wetlands. Approximately 300,455 square feet of PEM wetlands, 4,647 square feet of palustrine scrub-shrub (PSS) wetlands, 167,041 square feet of palustrine forested (PFO) wetlands, and 22,424 feet of palustrine open water (POW) wetlands were identified.

### 3.2 WATERWAYS

In total, 36 waterways were identified during the delineation. Most of the waterways identified have been previously impacted during past projects within the existing ROW. Approximately 14,060 square feet of ephemeral channels, 2,877 square feet of intermittent channels, and 61,255 square feet of perennial channels were identified.

## 4.0 CONCLUSIONS

Based on the results of the field investigation 494,567 square feet of wetlands and 78,192 square feet of stream channel were identified within the investigation area. Any impacts to the identified resources would require authorization under PADEP and USACE guidelines.

## 5.0 REFERENCES


Cowardin, L. M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands deepwater habitats of the United States. U.S. Department of the Interior and the Fish and Wildlife Service, Washington, D.C.

Environmental Laboratory.1987. Corps of Engineers Wetlands Delineation Manual. Tech. Rep. Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, M.S.

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Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions [Online WWW]. Available URL: http://soils.usda.gov/technical/classification/osd/index.html. Accessed10/6/18. USDA-NRCS, Lincoln, NE.

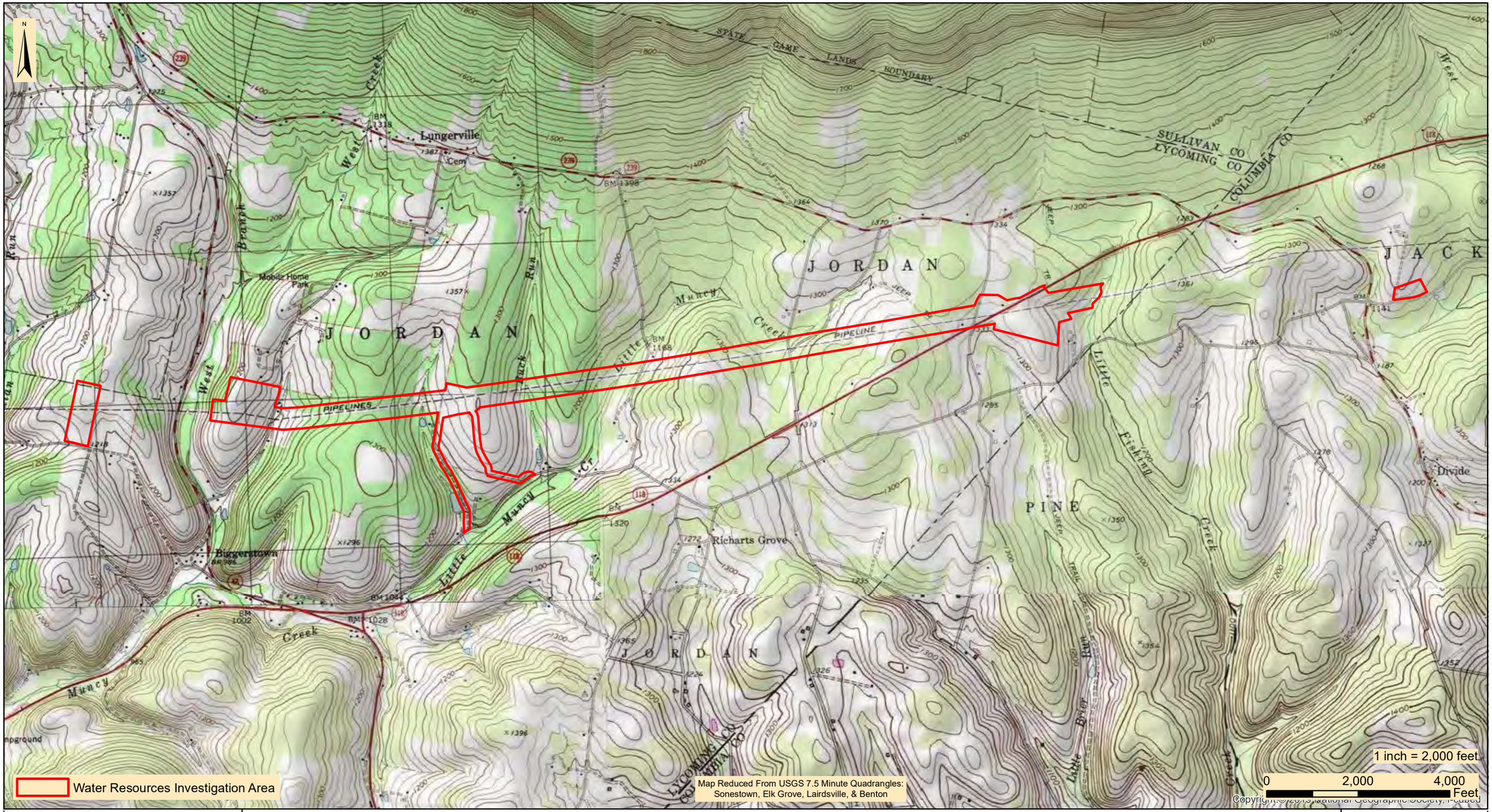
United States Department of Agriculture Soil Conservation Service. 2003. Soil Survey of Columbia & Lycoming County Pennsylvania

United States Fish and Wildlife Service. National Wetland Inventory Map, 7.5 Minute Series, Sonestown, Lairdsville, Benton & Elk Grove, Pennsylvania.

United States Geological Survey. Topographic Quadrangle 7.5-minute Series Quadrangles, Sonestown, Lairdsville, Benton & Elk Grove, Pennsylvania.

United States Geological Survey. 2018. Hydrography: National Hydrography Dataset and Watershed Boundary Dataset. http://nhd.usgs.gov/. Accessed October 12, 2018.

FIGURES

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT

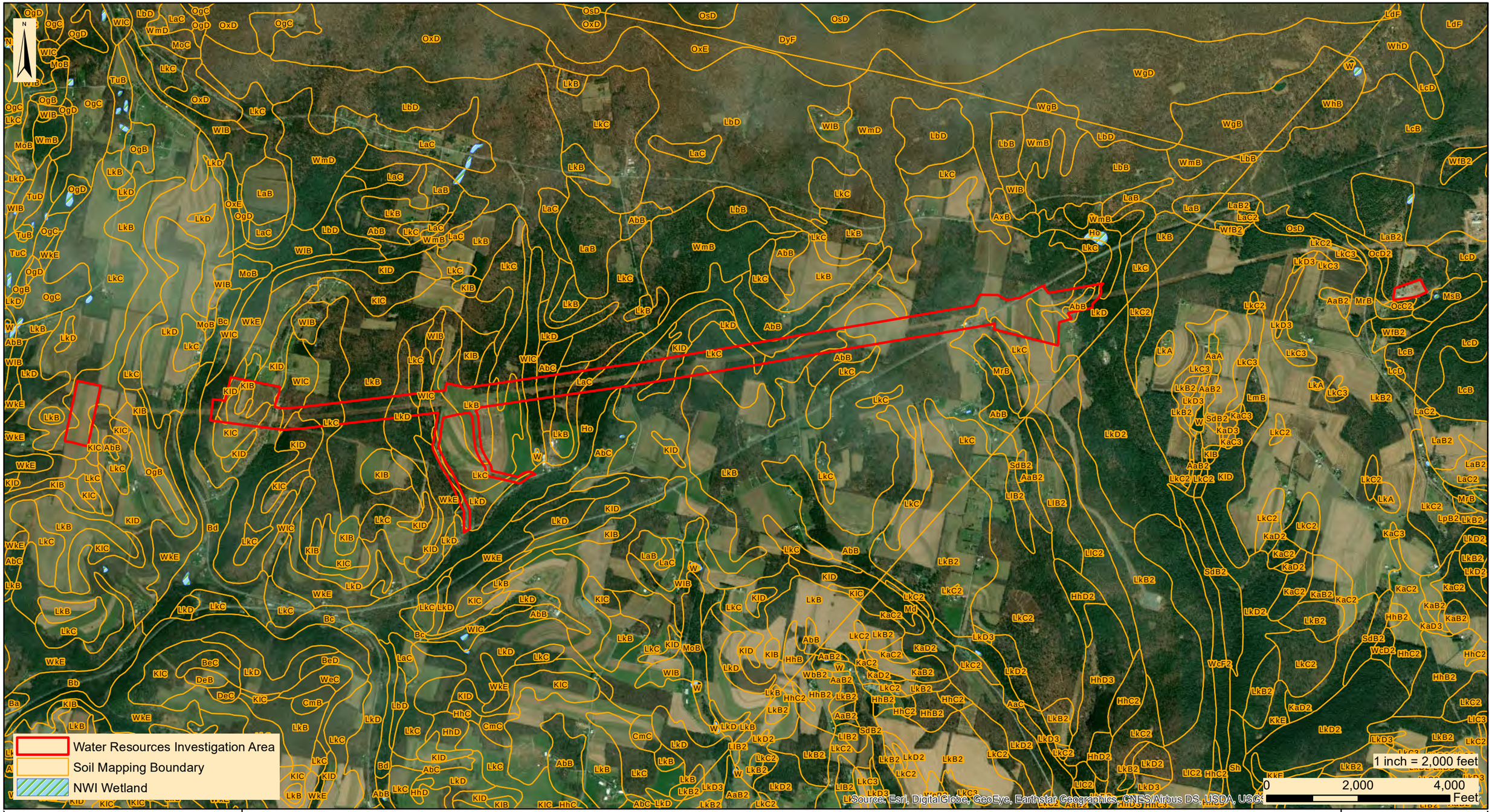
## BENTON LOOP

### PROJECT LOCATION MAP

COLUMBIA AND LYCOMING COUNTY

PENNSYLVANIA

| | |
|---|---|
| Date: | 02/05/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B001 |
| Drawn By: | JSJ |
| Figure Number: | 1 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT

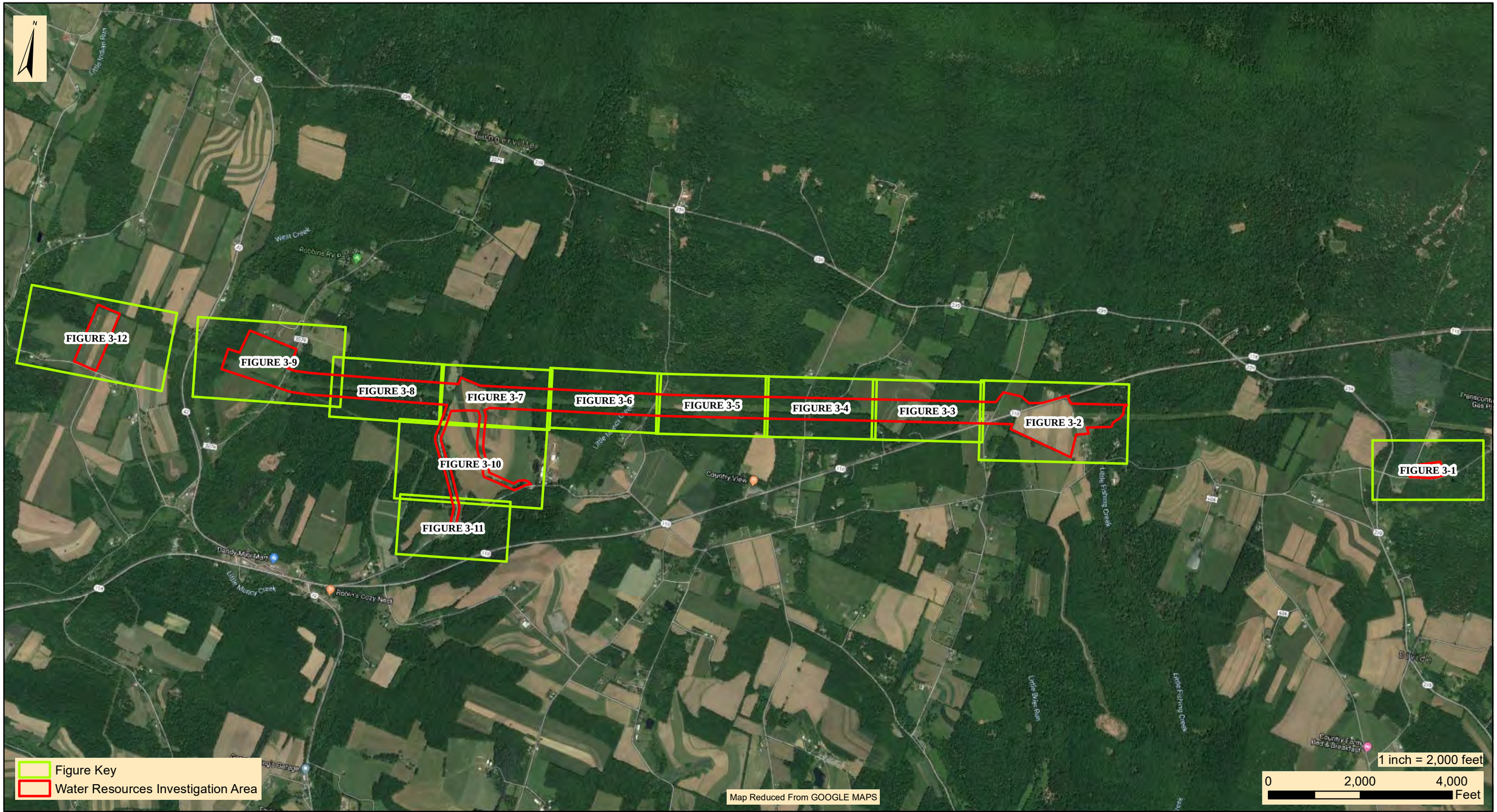
## BENTON LOOP

### USDA-NRCS SOILS AND NWI WETLANDS MAP

COLUMBIA AND LYCOMING COUNTY

PENNSYLVANIA

| | |
|---|---|
| Date: | 02/05/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B002 |
| Drawn By: | JSJ |
| Figure Number: | 2 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WETLAND DELINEATION KEY MAP

COLUMBIA AND LYCOMING COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003 |
| Drawn By: | BWH |
| Figure Number: | 3 |

ATTACHMENT A

WETLAND AND WATER RESOURCE DELINEATION DATA PACKAGE

WATER RESOURCES DELINEATION MAP

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

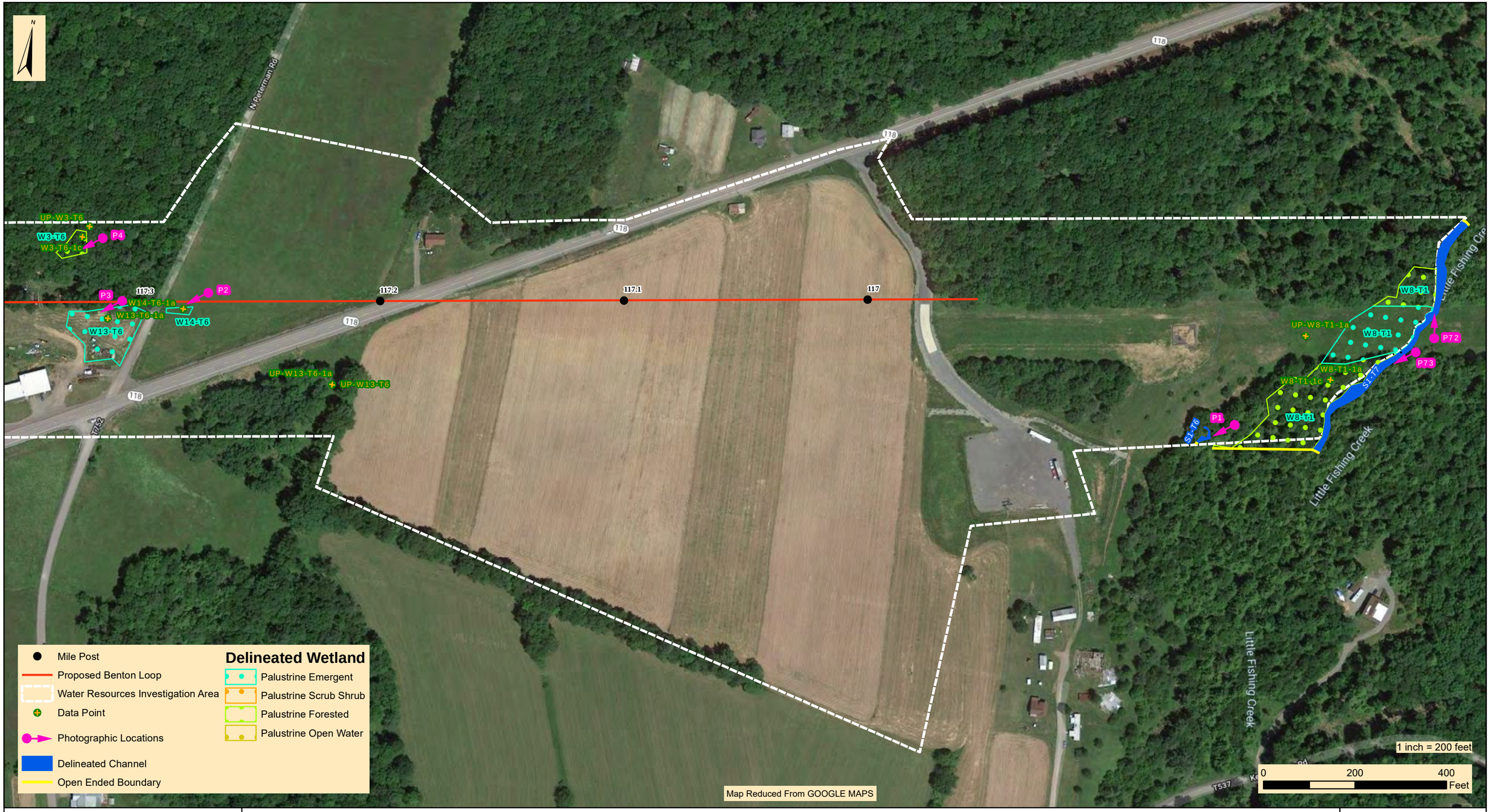
## LEIDY SOUTH PROJECT

## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JACKSON TOWNSHIP | COLUMBIA COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_1 |
| Drawn By: | BWH |
| Figure Number: | 3_1 |

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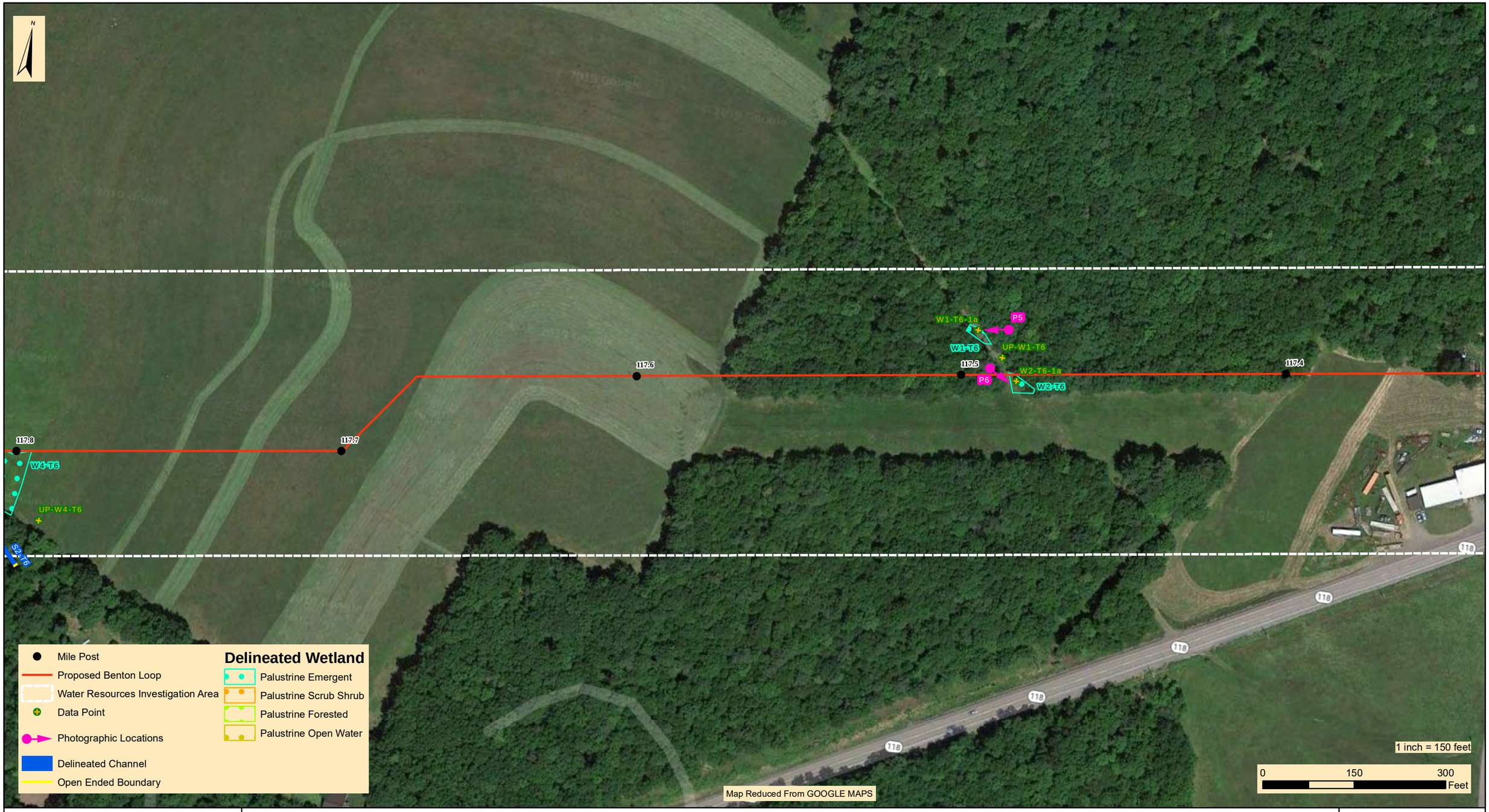
# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 08/23/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_2 |
| Drawn By: | BWH |
| Figure Number: | 3_2 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT

## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_3 |
| Drawn By: | BWH |
| Figure Number: | 3_3 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_4 |
| Drawn By: | BWH |
| Figure Number: | 3_4 |

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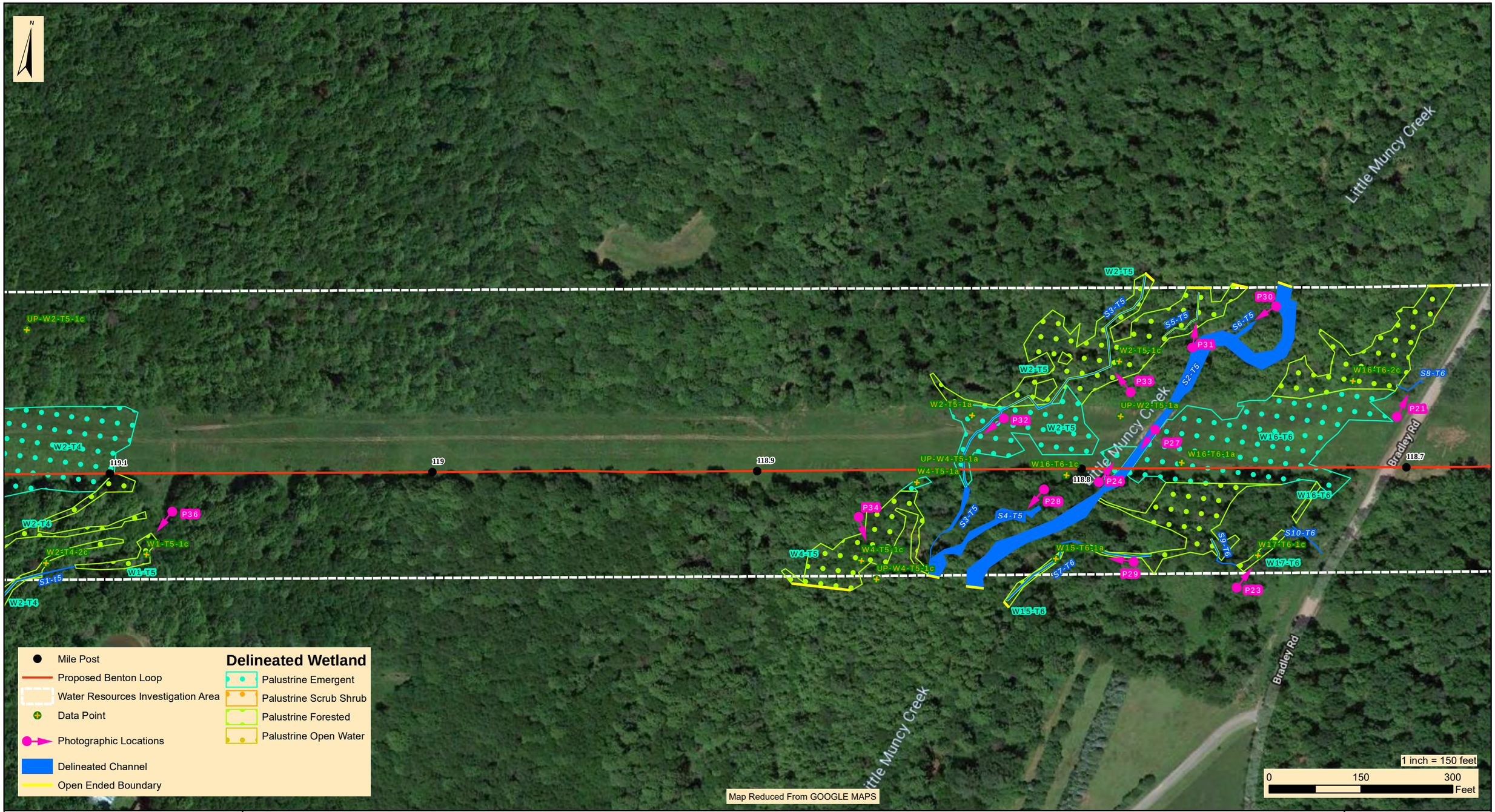
# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_5 |
| Drawn By: | BWH |
| Figure Number: | 3-5 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 08/23/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B0030_6 |
| Drawn By: | BWH |
| Figure Number: | 3-6 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT

## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_7 |
| Drawn By: | BWH |
| Figure Number: | 3-7 |

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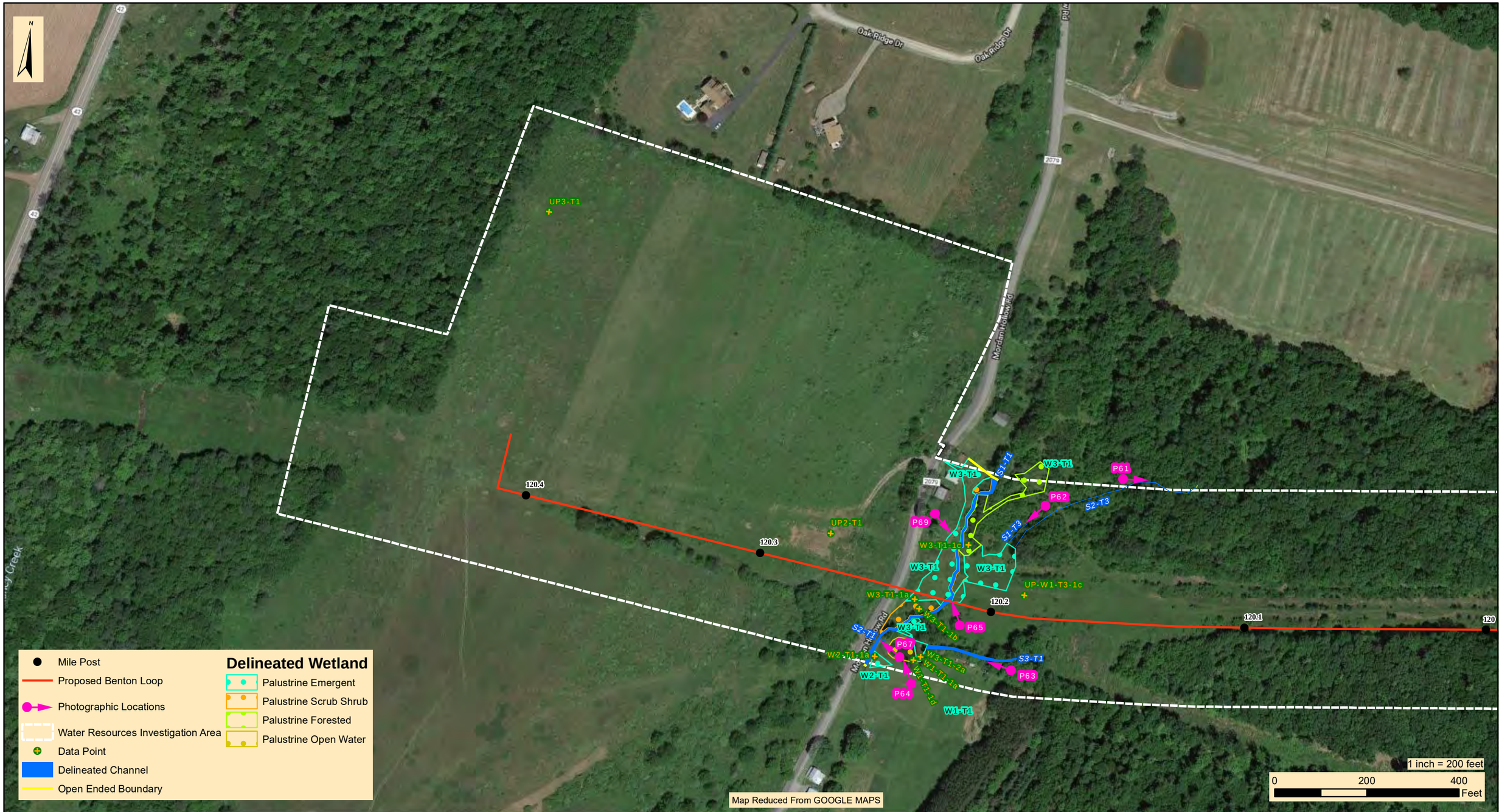
# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_8 |
| Drawn By: | BWH |
| Figure Number: | 3-8 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

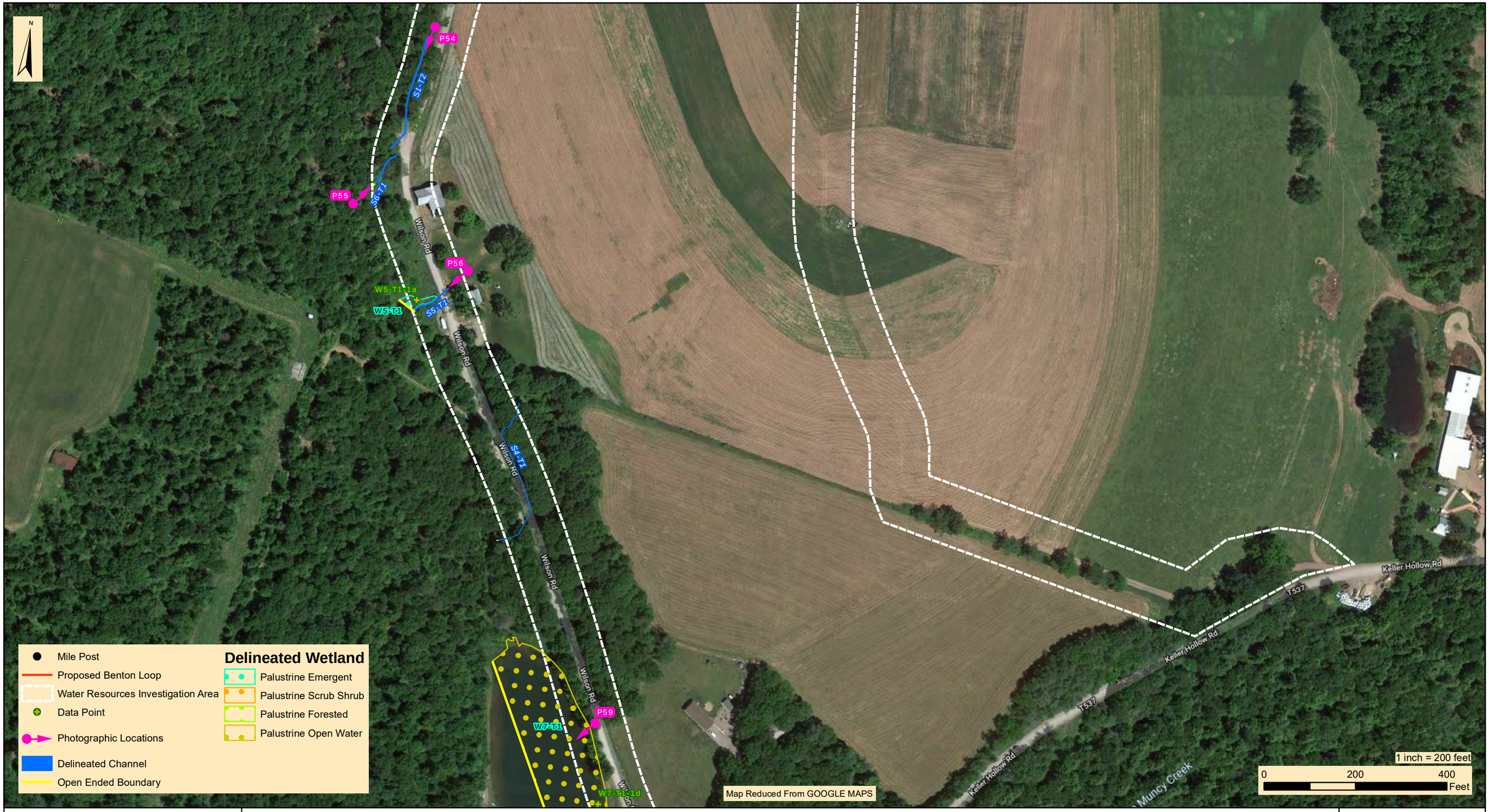
## LEIDY SOUTH PROJECT

## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_9 |
| Drawn By: | BWH |
| Figure Number: | 3-9 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_10 |
| Drawn By: | BWH |
| Figure Number: | 3-10 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_11 |
| Drawn By: | BWH |
| Figure Number: | 3-11 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## BENTON LOOP

### WATER RESOURCES DELINEATION MAP

JORDAN TOWNSHIP | LYCOMING COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS202B003_12 |
| Drawn By: | BWH |
| Figure Number: | 3-12 |

# PHOTOGRAPHIC DOCUMENTATION

**ID:** Photo 1

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a southwestern view of stream S1-T6.

**ID:** Photo 2

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows a southeastern view of wetland W14-T6.

**ID:** Photo 3

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows a southwestern view of wetland W13-T6.

**ID:** Photo 4

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a southwestern view of wetland W3-T6.

**ID:** Photo 5

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows an eastern view of wetland W1-T6.

**ID:** Photo 6

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a southeastern view of wetland W2-T6.

**ID:** Photo 7

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a western view of wetland W4-T6.

**ID:** Photo 8

**Date:** 10/22/18

**Taken by:** PF

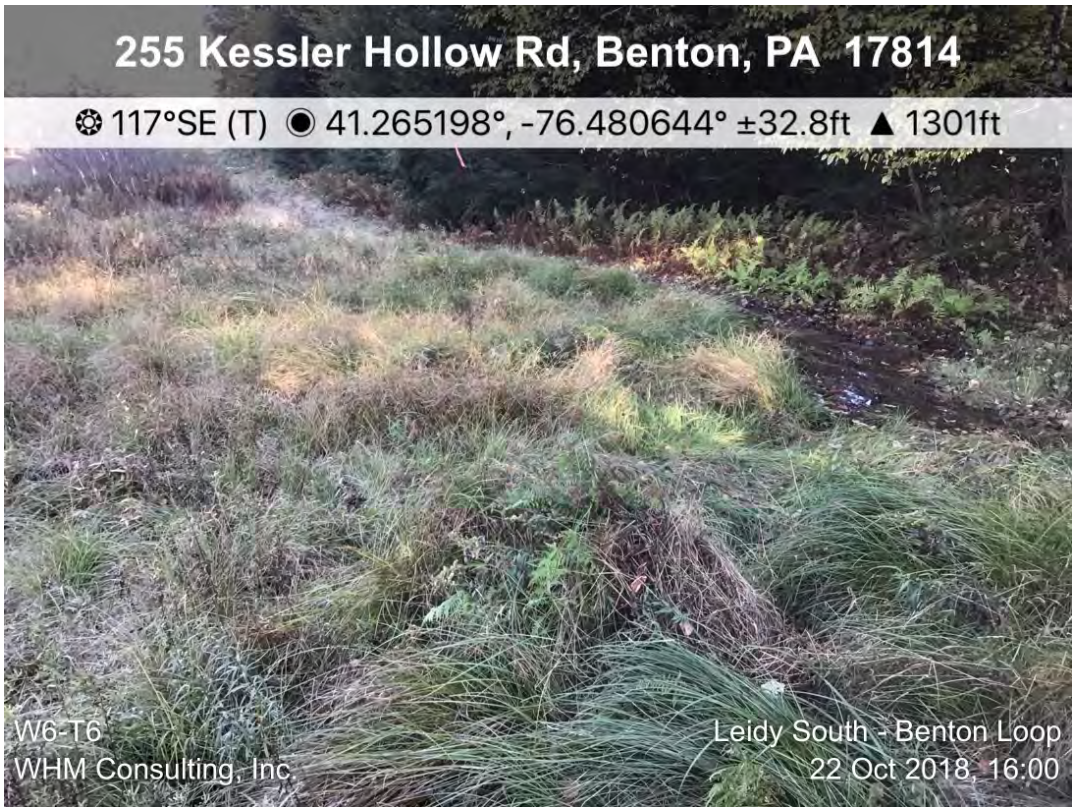
**Comments:** This photo shows a southern view of stream S2-T6.

**ID:** Photo 9

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows an eastern view of wetland W5-T6.




**ID:** Photo 10

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a southwestern view of wetland W6-T6.

**ID:** Photo 11

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a northwestern view of wetland W7-T6.

**ID:** Photo 12

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a western view of stream S3-T6.

**ID:** Photo 13

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a western view of stream S4-T6.

**ID:** Photo 14

**Date:** 10/22/18

**Taken by:** PF

**Comments:** This photo shows a southern view of stream S5-T6.

**ID:** Photo 15

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows a northeastern view of W12-T6.

**ID:** Photo 16

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows a southeastern view of wetland W8-T6.

**ID:** Photo 17

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows a southwestern view of wetland W9-T6.

**ID:** Photo 18

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows an eastern view of wetland W10-T6.

**ID:** Photo 19

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows a western view of wetland W11-T6.

**ID:** Photo 20

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows a northern view of stream S6-T6.

**ID:** Photo 21

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a northern view of stream S8-T6.

**ID:** Photo 22

**Date:** 10/23/18

**Taken by:** PF

**Comments:** This photo shows an eastern view of S10-T6.

**ID:** Photo 23

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a northeastern view of wetland W17-T6.

**ID:** Photo 24

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a northeastern view of wetland W16-T6.

**ID:** Photo 25

**Date:** 10/23/18

**Taken by:** PF

**Comments:**
This photo shows a western view of wetland W16-T6.

**ID:** Photo 26

**Date:** 10/23/18

**Taken by:** PF

**Comments:**
This photo shows a northwestern view of stream S9-T6.

**ID:** Photo 27

**Date:** 10/22/18

**Taken by:** CB

**Comments:** This photo shows a southern view of stream S2-T5 (Little Muncy Creek).

**ID:** Photo 28

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a southwestern view of stream S4-T5.

**ID:** Photo 29

**Date:** 10/23/18

**Taken by:** PF

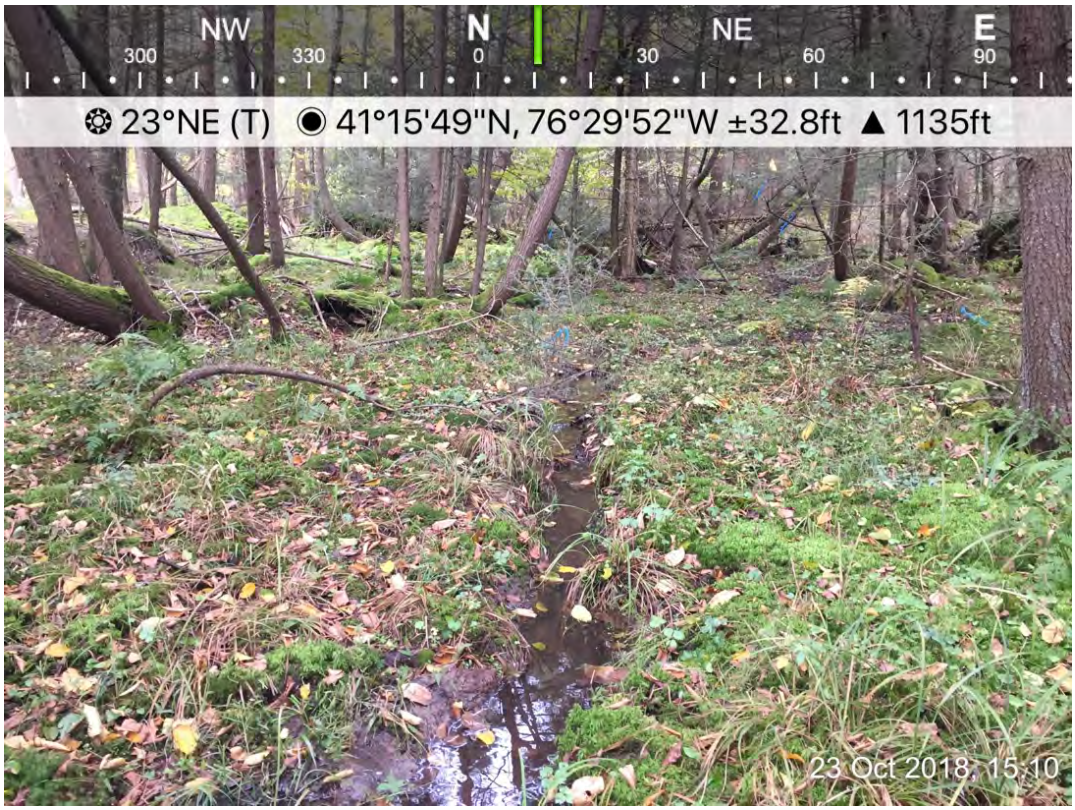
**Comments:** This photo shows a western view of stream S7-T6 and wetland W16-T6.

**ID:** Photo 30

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a southwestern view of stream S6-T5.




**ID:** Photo 31

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a northern view of stream S5-T5.

**ID:** Photo 32

**Date:** 10/22/18

**Taken by:** CB

**Comments:** This photo shows a southeastern view of stream S3-T5 and wetland W2-T5.

**ID:** Photo 33

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a northwestern view of wetland W2-T5.

**ID:** Photo 34

**Date:** 10/23/18

**Taken by:** CB

**Comments:** This photo shows a southern view of wetland W4-T5.

**ID:** Photo 35

**Date:** 10/18/18

**Taken by:** CB

**Comments:** This photo shows a southwestern view of wetland W2-T4.

**ID:** Photo 36

**Date:** 10/18/18

**Taken by:** CB

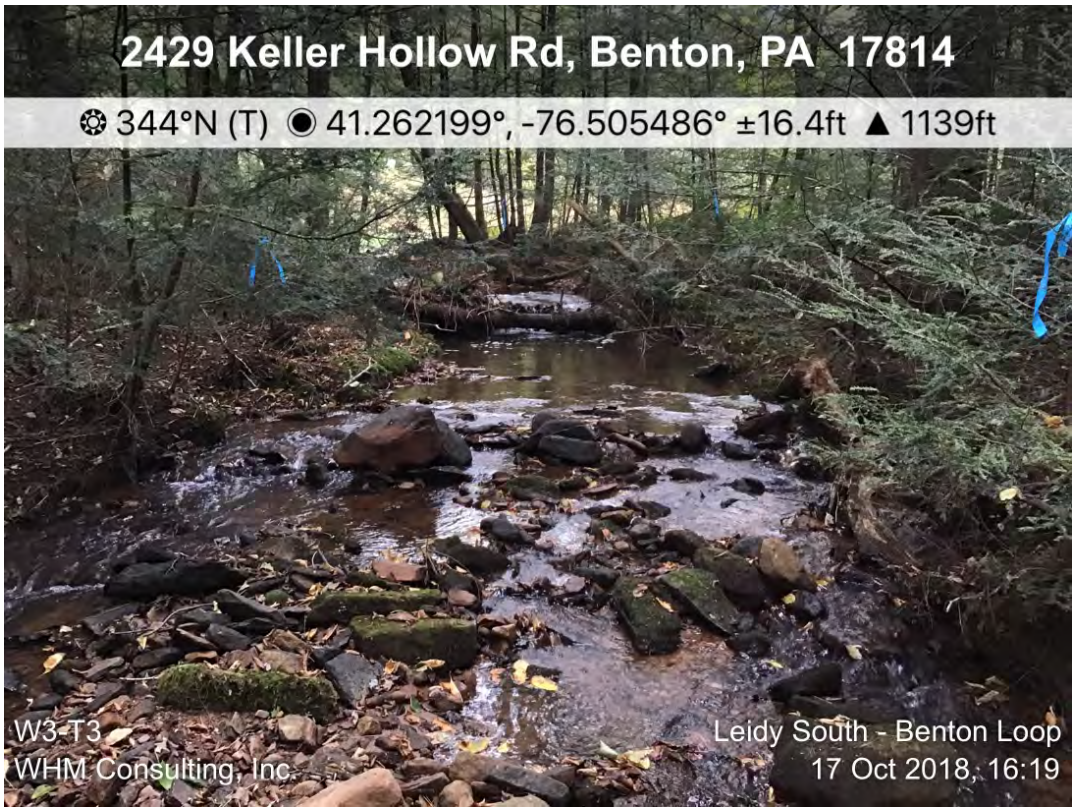
**Comments:** This photo shows a southern view of wetland W1-T5.

**ID:** Photo 37

**Date:** 10/18/18

**Taken by:** CB

**Comments:** This photo shows a northwestern view of wetland W1-T4.




**ID:** Photo 38

**Date:** 10/17/18

**Taken by:** JH

**Comments:** This photo shows a northern view of stream S3-T3.

**ID:** Photo 39

**Date:** 10/17/18

**Taken by:** JH

**Comments:** This photo shows a northern view of wetland W3-T3.

**ID:** Photo 40

**Date:** 10/18/18

**Taken by:** DW

**Comments:** This photo shows a southeastern view of stream S1-T4.

**ID:** Photo 41

**Date:** 10/18/18

**Taken by:** DW

**Comments:** This photo shows a southwestern view of wetland W2-T4.

**ID:** Photo 42

**Date:** 10/17/18

**Taken by:** JH

**Comments:** This photo shows a western view of wetland W2-T3.

**ID:** Photo 43

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a southwestern view of wetland W1-T2.

**ID:** Photo 44

**Date:** 10/18/18

**Taken by:** CB

**Comments:** This photo shows a northeastern view of W2-T2.

**ID:** Photo 45

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows an eastern view of stream S8-T2.

**ID:** Photo 46

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a southeastern view of stream S9-T2.

**ID:** Photo 47

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a northeastern view of stream S7-T2.

**ID:** Photo 48

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a northeastern view of stream S6-T2.

**ID:** Photo 49

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a northeastern view of stream S5-T2.

**ID:** Photo 50

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a southeastern view of stream S4-T2.

**ID:** Photo 51

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a northern view of stream S3-T2.

**ID:** Photo 52

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a northwestern view of stream S2-T2.

**ID:** Photo 53

**Date:** 10/16/18

**Taken by:** DW

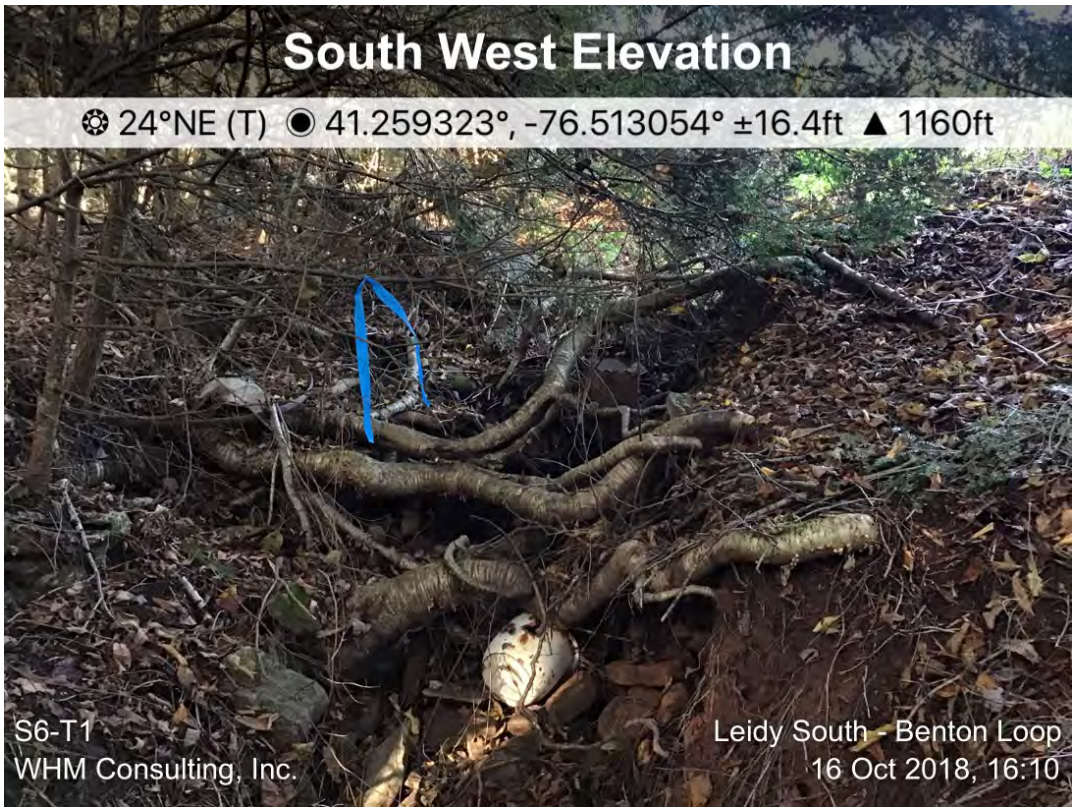
**Comments:** This photo shows a northern view of wetland W6-T1.

**ID:** Photo 54

**Date:** 10/17/18

**Taken by:** CB

**Comments:** This photo shows a southern view of stream S1-T2.




**ID:** Photo 55

**Date:** 10/16/18

**Taken by:** JH

**Comments:** This photo shows a northeastern view of stream S6-T1.

**ID:** Photo 56

**Date:** 10/16/18

**Taken by:** JH

**Comments:** This photo shows a southwestern view of stream S5-T1.

**ID:** Photo 57

**Date:** 10/16/18

**Taken by:** DW

**Comments:** This photo shows a southwestern view of wetland W5-T1 abutting stream S5-T1.

**ID:** Photo 58

**Date:** 10/16/18

**Taken by:** JH

**Comments:** This photo shows a northeastern view of stream S4-T1.

**ID:** Photo 59

**Date:** 10/16/18

**Taken by:** JH

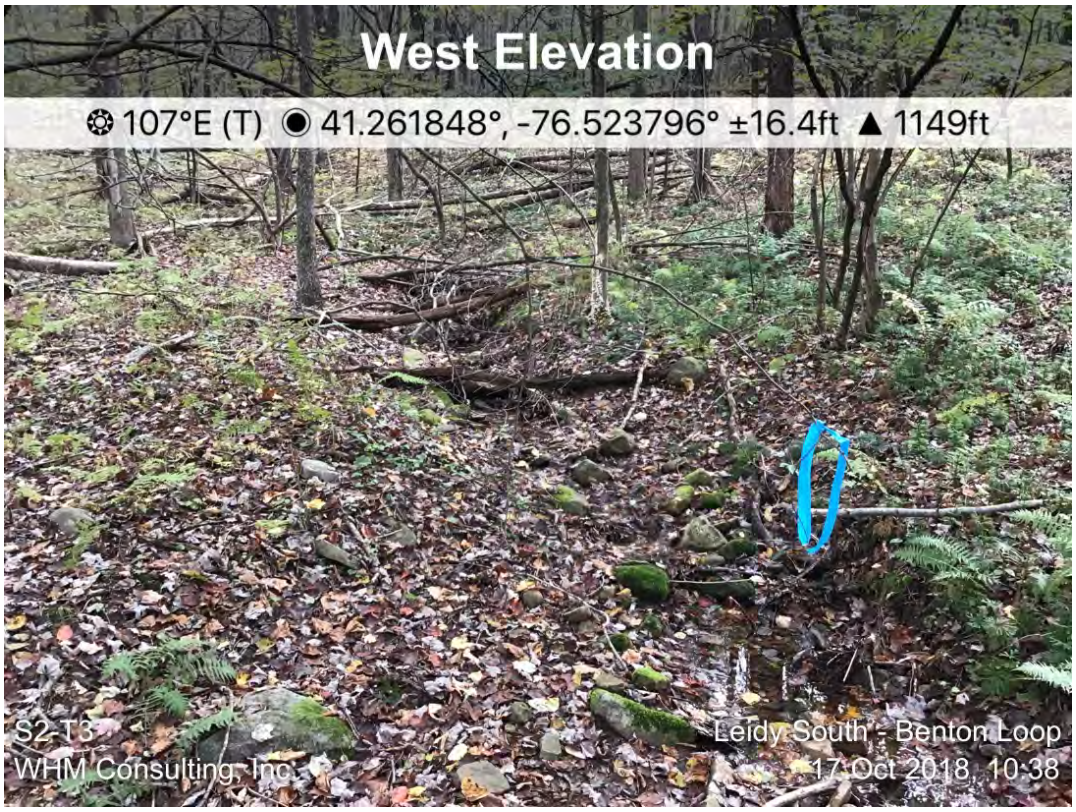
**Comments:** This photo shows a southwestern view of wetland W7-T1.

**ID:** Photo 60

**Date:** 10/16/18

**Taken by:** JH

**Comments:** This photo shows a northern view of wetland W5-T1.




**ID:** Photo 61

**Date:** 10/17/18

**Taken by:** JH

**Comments:** This photo shows an eastern view of stream S2-T3.

**ID:** Photo 62

**Date:** 10/17/18

**Taken by:** JH

**Comments:** This photo shows a southwestern view of stream S1-T3.

**ID:** Photo 63

**Date:** 10/16/18

**Taken by:** JH

**Comments:** This photo shows a western view of stream S3-T1.

**ID:** Photo 64

**Date:** 10/16/18

**Taken by:** JH

**Comments:** This photo shows a northwestern view of wetland W1-T1.

**ID:** Photo 65

**Date:** 10/15/18

**Taken by:** JH

**Comments:** This photo shows a northwestern view of wetland W3-T1 and stream S1-T1.

**ID:** Photo 66

**Date:** 10/16/18

**Taken by:** JH

**Comments:** This photo shows a western view of wetland W2-T1.

**ID:** Photo 67

**Date:** 10/15/18

**Taken by:** JH

**Comments:** This photo shows a northeastern view of stream S2-T1.

**ID:** Photo 68

**Date:** 10/15/18

**Taken by:** JH

**Comments:** This photo shows a northeastern view of stream S1-T1.

**ID:** Photo 69

**Date:** 10/15/18

**Taken by:** JH

**Comments:** This photo shows a southeastern view of wetland W3-T1.

**ID:** Photo 70

**Date:** 4/3/19

**Taken by:** JH

**Comments:** This photo shows a southeastern view of the PEM portion of wetland W8-T1.

**ID:** Photo 71

**Date:** 4/3/19

**Taken by:** JH

**Comments:**
This photo shows a southeastern view of the PFO portion of wetland W8-T1.

**ID:** Photo 72

**Date:** 3/26/19

**Taken by:** JH

**Comments:**
This photo shows a northern view of Little Fishing Creek (S1-T7) within the existing pipeline ROW.

**ID:** Photo 73

**Date:** 3/26/19

**Taken by:** JH

**Comments:**
This photo shows a southwestern view of Little Fishing Creek (S1-T7) outside of the existing pipeline ROW.

# WETLAND, UPLAND, AND WATERWAYS DATA FORMS

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W8-T1-1a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 15-25

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.267452 Long.: -76.460592 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W8-T1-1a is located within the PEM portion of the wetland within an existing pipeline ROW. This wetland abuts S1-T7 (Little Fishing Creek).

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- x Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- x FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes x | No ___ | Depth (inches): 1" | | |
| Water table present? | Yes x | No ___ | Depth (inches): surface | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W8-T1-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Juncus effusus* | 40 | Yes | FACW |
| 2 *Carex sp.* | 20* | Yes | FAC |
| 3 *Rubus hispidus* | 20 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80** | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet).
*Due to the growth habit of the Carex sp. within the standing water, a Facultative wetland indicator was assumed.
**30% of cover was comprised of Sphagnum sp.

## SOIL

**Sampling Point:** W8-T1-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 5/1 | 75 | 7.5YR 5/6 | 25 | C | PL | clay loam | rock refusal at 12" |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 12"

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W8-T1-1c

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 15-25

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.267452 Long.: -76.460592 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W8-T1-1c is located within the PFO portion of the wetland adjacent to an existing pipeline ROW. This wetland abuts S1-T7 (Little Fishing Creek).

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- x Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- x FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | | |
| Water table present? | Yes x | No ___ | Depth (inches): -1" | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W8-T1-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 70 | Yes | *FAC |
| 2 *Betula nigra* | 20 | Yes | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 90 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tusga canadensis* | 40 | Yes | *FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 40 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Osmundastrum cinnamomeum* | 15 | Yes | FACW |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 15 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

x 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet).
*Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.
** 40% of cover was comprised of Sphagnum sp.

## SOIL

**Sampling Point:** W8-T1-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 2/1 | 100 | | | | | | |
| 6-12 | 10yr 4/1 | 98 | 7.5YR 5/6 | 2 | C | M | clay loam | rock refusal at 12" |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
x Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock refusal
Depth (inches): 12"

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W8-T1-1a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.267692 Long.: -76.460839 Datum: NAD 83

Soil Map Unit Name Albrights silt loam (AbB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W8-T7 was taken on an existing pipeline right-of-way and is representative of W8-T1.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W8-T1-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Comptonia peregrina* | 50 | Yes | UPL |
| 2 *Schizachyrium scoparium* | 40 | Yes | FACU |
| 3 *Poaceae* | 20 | - | - |
| 4 *Solidago sp.* | 10 | - | - |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 60 | |
| FACU species | 40 | x 4 = | 160 | |
| UPL species | 50 | x 5 = | 250 | |
| Column totals | 90 | (A) | 410 | (B) |

Prevalence Index = B/A = 4.56

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W8-T1-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR 4/4 | 100 | | | | | silt loam | rock fragments present |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W13-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.266714 Long.: -76.470276 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W13-T6-1a is an isolated PEM located in a depressional area on existing pipeline right-of-way. There are several junk vehicles located the wetland area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W13-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Poa trivialis* | 80 | Yes | FACW |
| 2 *Phalaris arundinacea* | 40 | Yes | FACW |
| 3 *Scirpus atrovirens* | 5 | No | OBL |
| 4 *Scirpus cyperinus* | 5 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 130 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

x 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W13-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 90 | 7.5YR 5/6 | 10 | C | PL | silt loam | rock refusal at 8" |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 8"

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout the soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W13-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional upland swale Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.266524 Long.: -76.468434 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W13-T6-1a was taken in a swale area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W13-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Dennstaedtia punctilobula* | 30 | Yes | FACU |
| 2 *Solidago canadensis* | 20 | Yes | FACU |
| 3 *Fragaria vesca* | 20 | Yes | FACU |
| 4 *Dactylis glomerata* | 10 | No | FACU |
| 5 *Trifolium repens* | 5 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 85 | x 4 = | 340 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 85 | (A) | 340 | (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W13-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W14-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.266839 Long.: -76.469696 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W14-T6-1a is an isolated PEM located in a depressional area on existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | x | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | x | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes x | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W14-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Juncus effusus* | 60 | Yes | FACW |
| 2 *Phalaris arundinacea* | 20 | Yes | FACW |
| 3 *Dactylis glomerata* | 20 | Yes | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 67.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 80 | x 2 = | 160 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 20 | x 4 = | 80 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 100 | (A) | 240 | (B) |

Prevalence Index = B/A = 2.40

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

x 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W14-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 90 | 7.5YR 5/6 | 10 | C | PL | silt loam | rock refusal at 8" |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 8"

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout the soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W13-T6

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 5-8%

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.266524 Long.: -76.468434 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W13-T6 was taken just outside the boundary of W13-T6 and W14-T6 within an existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W13-T6

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Dactylis glomerata* | 100 | Yes | FACU |
| 2 *Trifolium repens* | 40 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 140 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 140 | x 4 = | 560 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 140 (A) | | 560 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W13-T6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 5/4 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T6-1c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.267173 Long.: -76.470575 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W3-T6-1c is a PFO vernal pool wetland located in a sparsely vegetated forested area. Hydrophytic vegetation was determined through morphologic adaptations. The wetland is isolated with no surface connection to other waters.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| x Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| x High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | x Sparsely Vegetated Concave Surface |
| x Saturation (A3) | x Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | x Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| x Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | x Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes x | No ___ | Depth (inches): 6" | | |
| Water table present? | Yes x | No ___ | Depth (inches): surface | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included standing water, saturation, and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T6-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Acer Rubrum* | 60 | Yes | FAC |
| 2 *Carya ovata** | 20 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 80 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 80 | x 3 = | 240 |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | 80 (A) | | 240 (B) |

Prevalence Index = B/A = 3.00

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- x 3 - Prevalence index is ≤3.0*
- x 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:*Morphologic adaptions - A majority of the Carya ovata present displayed buttressing roots and, therefore the indicator status was reassigned from FACU to FAC.
Vernal pool wetland, no herbaceous vegetation was present. Trees displayed buttressing roots.

## SOIL

**Sampling Point:** W3-T6-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/1 | 95 | 7.5YR 5/6 | 5 | C | PL | silt loam | organic matter present |
| 8-14" | 10YR 5/2 | 80 | 7.5YR 5/6 | 20 | C | PL | silt loam | rocky |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
x Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout the soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W3-T6

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.267244 Long.: -76.470531 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W3-T6 was taken just outside the boundary of W3-T6 within a forested area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3-T6

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Quercus rubra* | 100 | Yes | FACU |
| 2 | *Acer Rubrum* | 50 | Yes | FAC |
| 3 | *Betula alleghaniensis* | 20 | No | FAC |
| 4 | *Carya ovata* | 15 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 185 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Kalmia latifolia* | 20 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Lycopodium dendroideum* | 20 | Yes | FACU |
| 2 | *Dennstaedtia punctilobula* | 20 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 40 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 20 (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 70 | x 3 = | 700 | |
| FACU species | 175 | x 4 = | 780 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 245 | (A) | 910 | (B) |

Prevalence Index = B/A = 3.71

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W3-T6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | silt loam | rocky |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.266397 Long.: -76.473572 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T6-1a is an isolated PEM located in a depressional area on a utility line right-of-way. The wetland is isolated with no surface connection to other waters.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | x | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | x | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes x | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Carex vulpinoidea* | 70 | Yes | OBL |
| 2 *Reynoutria japonica* | 40 | Yes | FACU |
| 3 *Scirpus atrovirens* | 5 | No | OBL |
| 4 *Onoclea sensibilis* | 5 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 75 | x 1 = | 75 |
| FACW species | 5 | x 2 = | 10 |
| FAC species | | x 3 = | |
| FACU species | 40 | x 4 = | 160 |
| UPL species | | x 5 = | |
| Column totals | 120 (A) | | 245 (B) |

Prevalence Index = B/A = 2.04

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- ___ 2 - Dominance test is >50%
- X 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 95 | 7.5YR 5/6 | 5 | C | PL | silt loam | oxidized roots |
| 6-14" | 10YR 4/2 | 90 | 7.5YR 5/6 | 10 | C | PL | silt loam | rocky |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.266598 Long.: -76.473842 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W1-T6-1a is a PEM wetland located in a depressional area on a utility line right-of-way. The wetland is isolated with no surface connection to other waters.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T6-1a

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Carex vulpinoidea* | 70 | Yes | OBL |
| 2 | *Reynoutria japonica* | 40 | Yes | FACU |
| 3 | *Scirpus atrovirens* | 5 | No | OBL |
| 4 | *Onoclea sensibilis* | 5 | No | FACW |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = #DIV/0!

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 95 | 7.5YR 5/6 | 5 | C | PL | silt loam | oxidized roots |
| 6-14" | 10YR 4/2 | 90 | 7.5YR 5/6 | 10 | C | PL | silt loam | rocky |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
x Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T6

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 3 to 8 %

Subregion (LRR or MLRA): MLRA Lat.: 41.266491 Long.: -76.473675 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W1-T6 was taken between W1-T6 and W2-T6 on a utility line right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T6

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Acer Rubrum* | 50 | Yes | FAC |
| 2 *Quercus alba* | 40 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 90 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Lycopodium dendroideum* | 50 | Yes | FACU |
| 2 *Dennstaedtia punctilobula* | 30 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | 120 | x 4 = | 480 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 170 (A) | | 630 (B) |

Prevalence Index = B/A = 3.71

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W1-T6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | silt loam | rocky |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.265335 Long.: -76.479739 Datum: NAD 83

Soil Map Unit Name Albrights silt loam (AbB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W4-T6-1a is a PEM located in a swale feature on an existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 100 | Yes | FACW |
| 2 *Solidago rugosa* | 100 | Yes | FAC |
| 3 *Persicaria sagittata* | 100 | Yes | FACW |
| 4 *Poa trivialis* | 50 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 350 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W4-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16" | 10YR 4/2 | 98 | 10YR 5/6 | 2 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T6

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional swale Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.265114 Long.: -76.479214 Datum: NAD 83

Soil Map Unit Name Albrights silt loam (AbB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W4-T6 was taken just outside the boundary of W4-T6 within an existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T6

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Solidago canadensis* | 100 | Yes | FACU |
| 2 *Dactylis glomerata* | 100 | Yes | FACU |
| 3 *Fragaria vesca* | 10 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 210 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 210 | x 4 = | 840 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 210 (A) | | 840 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W4-T6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16" | 10YR 4/4 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W5-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.26541 Long.: -76.480834 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W5-T6-1a is a PEM located on an existing pipeline right-of-way. The wetland is isolated and has no surface connection to other waters.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | x | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | x | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes x | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W5-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Juncus effusus* | 50 | Yes | FACW |
| 2 *Carex lurida* | 20 | Yes | OBL |
| 3 *Solidago rugosa* | 20 | Yes | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W5-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 98 | 10YR 5/6 | 2 | C | PL | silt loam | oxidized roots |
| 6-14" | 10YR 4/2 | 98 | 10YR 5/6 | 2 | C | PL | silt loam | very stony |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout the soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W6-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.265257 Long.: -76.480573 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W6-T6-1a is a PEM located on an existing pipeline right-of-way. The wetland is isolated and has no surface connection to other waters. Wheel ruts are present in the wetland area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W6-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Juncus effusus* | 50 | Yes | FACW |
| 2 *Carex lurida* | 20 | Yes | OBL |
| 3 *Solidago rugosa* | 20 | Yes | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W6-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 98 | 10YR 5/6 | 2 | C | PL | silt loam | oxidized roots |
| 6-14" | 10YR 4/2 | 98 | 10YR 5/6 | 2 | C | PL | silt loam | very stony |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout the soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W6-T6

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): pipeline ROW Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.265311 Long.: -76.480665 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W6-T6 was taken just outside the boundary of W5-T6 and W6-T6 within an existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W6-T6

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Solidago canadensis* | 100 | Yes | FACU |
| 2 *Fragaria vesca* | 100 | Yes | FACU |
| 3 *Dichanthelium clandestinum* | 50 | Yes | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 250 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 50 | x 3 = | 150 | |
| FACU species | 200 | x 4 = | 800 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 250 | (A) | 950 | (B) |

Prevalence Index = B/A = 3.80

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W6-T6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16" | 10YR 4/6 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W7-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.265473 Long.: -76.484149 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W7-T6-1a is a PEM located adjacent to an existing pipeline right-of-way. The wetland begins in an area with several spring seeps which form a channel (S3-T6) within the wetland area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | x | Depth (inches): ___ |
| Water table present? | Yes | x | No | ___ | Depth (inches): surface |
| Saturation present? (includes capillary fringe) | Yes | x | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W7-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Juncus effusus* | 50 | Yes | FACW |
| 2 *Carex lurida* | 20 | Yes | OBL |
| 3 *Solidago rugosa* | 20 | Yes | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W7-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR 4/2 | 70 | 10YR 4/6 | 30 | C | PL | silt loam | oxidized roots |
| 4-12" | 10YR 3/2 | 100 | | | | | gravelly | red parent material |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- x Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout in the upper soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W7-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional swale Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.265476 Long.: -76.484349 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W7-T6 was taken just outside the boundary of W7-T6.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W7-T6-1a

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 50 | Yes | FACU |
| 2 | *Pinus strobus* | 30 | Yes | FACU |
| 3 | *Betula nigra* | 30 | Yes | FACW |
| 4 | *Acer rubrum* | 20 | No | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 130 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 20 | Yes | FACU |
| 2 | *Kalmia latifolia* | 10 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 30 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Solidago canadensis* | 100 | Yes | FACU |
| 2 | *Fragaria vesca* | 100 | Yes | FACU |
| 3 | *Dichanthelium clandestinum* | 50 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 250 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 30 | x 2 = | 60 |
| FAC species | 70 | x 3 = | 210 |
| FACU species | 310 | x 4 = | 1,240 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 410 (A) | | 1,510 (B) |

Prevalence Index = B/A = 3.68

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W7-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | organic matter | 100 | | | | | silt loam | organic matter |
| 4-12" | 10YR 6/4 | 60 | 10YR 3/2 | 40 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 5/21/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T10-1c

Investigator(s): DW/KC Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.265454 Long.: -76.484718 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil Y , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W1-T10-1a is a PFO located adjacent to an existing pipeline right-of-way. The wetland is abutting S4-T6.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- x FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | | |
| Water table present? | Yes x | No ___ | Depth (inches): surface | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T10-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis** | 40 | Yes | FAC |
| 2 *Betula nigra* | 15 | Yes | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 55 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Microstegium vimineum* | 20 | Yes | FAC |
| 2 *Impatiens capensis* | 15 | Yes | FACW |
| 3 *Osmundastrum cinnamomeum* | 15 | Yes | FACW |
| 4 *Thelypteris noveboracensis* | 10 | No | FAC |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 60 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

x 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet) The *Tsuga canadensis* displayed morphological adaptations through buttressed roots and the indicator status was changed from FACU to FAC

## SOIL

**Sampling Point:** W1-T10-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5" | 10YR 3/2 | 100 | | | | | silt loam | oxidized roots |
| 5-14" | 10YR 4/3 | 100 | | | | | gravelly silt loam | rock refusal 14" |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- x Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Problematic peidmont floodplain soils.

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W12-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 5 to 15%

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.26504 Long.: -76.484693 Datum: NAD 83

Soil Map Unit Name Holy silt loam (Ho) Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W12-T6-1a is located within PEM wetland east of a dirt road along the existing pipeline right-of-way.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W12-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Carex crinita* | 100 | Yes | OBL |
| 2 *Solidago rugosa* | 20 | No | FAC |
| 3 *Juncus effusus* | 20 | No | FACW |
| 4 *Onoclea sensibilis* | 10 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 150 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W12-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/2 | 85 | 10YR 5/6 | 15 | C | PL | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W11-T6-1c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 8 to 15%

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.265252 Long.: -76.485272 Datum: NAD 83

Soil Map Unit Name Holy silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W11-T6-1c is located within PFO wetland in a forested area north of the existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- x Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | x | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | x | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes x | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W11-T6-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 60 | Yes | FAC* |
| 2 *Acer rubrum* | 30 | Yes | FAC |
| 3 *Betula nigra* | 30 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 120 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Carex intumescens* | 20 | Yes | FACW |
| 2 *Solidago rugosa* | 10 | Yes | FAC |
| 3 *Carex stricta* | 10 | Yes | OBL |
| 4 *Solidago rugosa* | 10 | Yes | FAC |
| 5 *Onoclea sensibilis* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 55 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | x 1 = | | |
| FACW species | x 2 = | | |
| FAC species | x 3 = | | |
| FACU species | x 4 = | | |
| UPL species | x 5 = | | |
| Column totals | (A) | (B) | |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet) * Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.

## SOIL

**Sampling Point:** W11-T6-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR 4/2 | 80 | 10YR 5/6 | 20 | C | PL | silt loam | oxidized roots |
| 4-12" | 10YR5/1 | 80 | 10YR 6/8 | 20 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
x Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W11-T6-1c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 5 to 8 %

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.265159 Long.: -76.485171 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W11-T6 was taken in a forested area adjacent to W11-T6.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W11-T6-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Quercus rubra* | 60 | Yes | FACU |
| 2 | *Pinus strobus* | 60 | Yes | FACU |
| 3 | *Acer rubrum* | 40 | Yes | FAC |
| 4 | *Betula lenta* | 5 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 165 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Dennstaedtia punctilobula* | 10 | Yes | FACU |
| 2 | *Lycopodium obscurum* | 5 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 15 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 20.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 40 | x 3 = | 120 | |
| FACU species | 140 | x 4 = | 560 | |
| UPL species | | x 5 = | | |
| Column totals | 180 | (A) | 680 | (B) |

Prevalence Index = B/A = 3.78

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W11-T6-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR 4/4 | 100 | | | | | silt loam | |
| 4-12" | 10YR 5/6 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W10-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): none Slope (%): 5 to 8%

Subregion (LRR or MLRA): MLRA Lat.: 41.264912 Long.: -76.485257 Datum: NAD 83

Soil Map Unit Name Holly silt loam Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W10-T6-1a is located within an isolated PEM wetland located on an existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | x | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | x | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes x | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W10-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Carex lurida* | 80 | Yes | OBL |
| 2 *Juncus effusus* | 60 | Yes | FACW |
| 3 *Solidago rugosa* | 20 | No | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 160 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W10-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/2 | 90 | 10YR 5/6 | 10 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout in the upper soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W8-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 5 to 8%

Subregion (LRR or MLRA): MLRA Lat.: 41.26477 Long.: -76.485116 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W8-T6-1a is an isolated PEM wetland located on an existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | x | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | x | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes x | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W8-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Carex lurida* | 80 | Yes | OBL |
| 2 *Juncus effusus* | 60 | Yes | FACW |
| 3 *Solidago rugosa* | 20 | No | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 160 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W8-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/2 | 90 | 10YR 5/6 | 10 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout in the upper soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W9-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 5 to 8%

Subregion (LRR or MLRA): MLRA Lat.: 41.264661 Long.: -76.485165 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W9-T6-1a is an isolated PEM wetland located adjacent to an existing pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W9-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Scirpus cyperinus* | 50 | Yes | FACW |
| 2 *Onoclea sensibilis* | 20 | Yes | FACW |
| 3 *Carex stricta* | 20 | Yes | OBL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90* = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

x 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet) *Sphagnum moss covered 40% of aerial coverage.

## SOIL

**Sampling Point:** W9-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/2 | 90 | 10YR 5/6 | 10 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout in the upper soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W8-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional swale Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.264843 Long.: -76.485111 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W8-T6 was taken on an existing pipeline right-of-way and is representative of W7-T6, W8-T6 and W10-T6.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W8-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Dennstaedtia punctilobula* | 100 | Yes | FACU |
| 2 *Solidago canadensis* | 30 | Yes | FACU |
| 3 *Dichanthelium clandestinum* | 20 | No | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 150 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 20 | x 3 = | 60 | |
| FACU species | 130 | x 4 = | 520 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 150 | (A) | 580 | (B) |

Prevalence Index = B/A = 3.87

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W8-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | silt loam | rock fragments present |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W16-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.263289 Long.: -76.497915 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W16-T6-1a is located on an existing pipeline ROW within the PEM portion of a PEM/ PFO wetland complex. Muncy Creek runs throughout this portion of the wetland. Wheel ruts were present throughout the wetland area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | x | Depth (inches): ___ |
| Water table present? | Yes | x | No | ___ | Depth (inches): surface |
| Saturation present? (includes capillary fringe) | Yes | x | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W16-T6-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 40 | Yes | FACW |
| 2 *Carex stricta* | 40 | Yes | OBL |
| 3 *Juncus effusus* | 30 | Yes | FACW |
| 4 *Solidago rugosa* | 30 | Yes | FAC |
| 5 *Scirpus cyperinus* | 10 | Yes | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 150 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet).

## SOIL

**Sampling Point:** W16-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/2 | 95 | 10YR 5/6 | 5 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout in the soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W16-T6-1c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.26317 Long.: -76.498586 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W16-T6-1c is located within the PFO portion of a PEM/ PFO wetland located in a forested area adjacent to, and south of, an existing pipeline ROW. This portion of the wetland abuts Muncy Creek (S2-T5) and is hydrologically connected to W15-T6 via S7-T6 and to W17-T6 via S9-T6.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | | |
| Water table present? | Yes x | No ___ | Depth (inches): surface | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W16-T6-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 100 | Yes | FAC* |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 40 | Yes | FACW |
| 2 *Carex stricta* | 40 | Yes | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

x 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet). *Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.

## SOIL

**Sampling Point:** W16-T6-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/2 | 95 | 10YR 5/6 | 5 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout in the upper soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W16-T6-2c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263749 Long.: -76.496967 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W16-T6-12c is located in the PFO portion of a PEM/PFO wetland complex. The PFO area is located in a forested area adjacent to, and north of, an existing pipeline right-of-way. This PFO portion of the wetland abuts S8-T6.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| x High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsely Vegetated Concave Surface |
| x Saturation (A3) | x Oxidized Rhizospheres on Living Roots (C3) | x Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | x Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| x Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | x Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes x No ___ Depth (inches): surface

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W16-T6-2c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 100 | Yes | FAC* |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 40 | Yes | FACW |
| 2 *Carex stricta* | 40 | Yes | OBL |
| 3 *Osmunda cinnamomea* | 20 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet). *Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.

## SOIL

**Sampling Point:** W16-T6-2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/2 | 95 | 10YR 5/6 | 5 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W17-T6-1c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 15-Aug

Subregion (LRR or MLRA): MLRA Lat.: 41.26292 Long.: -76.497398 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W17-T6-1c is located within the PFO wetland located in a forested area adjacent to an existing pipeline ROW. This wetland abuts S9-T6 and is which also hydrologically connects this wetland to W16-T6.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | x | Depth (inches): ___ |
| Water table present? | Yes | x | No | ___ | Depth (inches): surface |
| Saturation present? (includes capillary fringe) | Yes | x | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included saturation and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W17-T6-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 100 | Yes | FAC* |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 40 | Yes | FACW |
| 2 *Carex stricta* | 30 | Yes | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 70 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

x 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet). *Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.

## SOIL

**Sampling Point:** W17-T6-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/2 | 95 | 10YR 5/6 | 5 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Oxidized Roots were present throughout in the upper soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W15-T6-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.262791 Long.: -76.498586 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W15-T6-1a is located within a PEM wetland. S7-T6 flows throughout the wetland. This wetland is also hydrologically connected to W16-T6 through S7-T6.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes x No ___ Depth (inches): surface

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W15-T6-1a

| Tree Stratum (Plot Size: 30') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size: 15') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size: 5') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Juncus effusus* | 40 | Yes | FACW |
| 2 *Onoclea sensibilis* | 20 | Yes | FACW |
| 3 *Carex lurida* | 20 | Yes | OBL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size: 30') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species ____ x 1 = ____

FACW species ____ x 2 = ____

FAC species ____ x 3 = ____

FACU species ____ x 4 = ____

UPL species ____ x 5 = ____

Column totals ____ (A) ____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W15-T6-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/2 | 95 | 10YR 5/6 | 5 | C | PL | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2-T5-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Slight hilltop Local relief (concave, convex, none): convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263462 Long.: -76.49831 Datum: NAD 83

Soil Map Unit Name Holly Silt Loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsely Vegetated Concave Surface |
| ___ Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| | |
|---|---|
| Field Observations:<br>Surface water present? Yes ___ No X Depth (inches): ___<br>Water table present? Yes ___ No X Depth (inches): ___<br>Saturation present? Yes ___ No X Depth (inches): ___<br>(includes capillary fringe) | **Wetland hydrology present?** Yes ___ No X |
| Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | |
| Remarks: No hydrology | |

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2-T5-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Rubus hispidus* | 80 | Yes | FACW |
| 2 *Solidago canadensis* | 20 | No | FACU |
| 3 *Schizachyrium scoparium* | 15 | No | FACU |
| 4 *Euthamia graminifolia* | 10 | No | FAC |
| 5 *Lycopodium dendroideum* | 10 | No | FACU |
| 6 *Lotus corniculatus* | 5 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 140* | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet) *Site was covered with 30% of an unidentified polytrichum species.

## SOIL

**Sampling Point:** UP-W2-T5-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/3 | 100 | | | | | Sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T5-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 41.263383 Long.: -76.499186 Datum: NAD 83

Soil Map Unit Name Holly Silt Loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T5-1a is located in the PEM portion of a PEM/PFO wetland complex located on an existing pipeline right-of-way. S3-T5 flows throughout and provides hydrology to this wetland complex.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsely Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | X Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | X Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 0.5

Water table present? Yes X No ___ Depth (inches): surface

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T5-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Dichanthelium clandestinum* | 40 | Yes | FAC |
| 2 *Carex crinita* | 30 | Yes | OBL |
| 3 *Persicaria sagittata* | 20 | No | OBL |
| 4 *Juncus effusus* | 10 | No | FACW |
| 5 *Euthamia graminifolia* | 10 | No | FAC |
| 6 *Onoclea sensibilis* | 10 | No | FACW |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T5-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/3 | 85 | 7.5YR 5/6 | 15 | C | M | silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T5-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 41.263706 Long.: -76.498359 Datum: NAD 83

Soil Map Unit Name Holly Silt Loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T5-1 is located in the PFO portion of a PEM/PFO wetland complex located on an existing pipeline right-of-way. S3-T5 flows throughout and provides hydrology to this wetland complex. S2-T5 also flows throughout the PFO area of the wetland.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsely Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | X Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | X Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | X Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T5-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 80 | Yes | FAC* |
| 2 | *Betula nigra* | 20 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 20 | Yes | FAC* |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Glyceria striata* | 20 | Yes | OBL |
| 2 | *Carex crinita* | 5 | Yes | OBL |
| 3 | *Osmunda cinnamomea* | 5 | Yes | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 30** = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

*Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.

**Site was covered with 80% sphagnum moss

## SOIL

**Sampling Point:** W2-T5-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | 10YR2/1 | 100 | | | | | Silt Loam | |
| 1-7" | 10YR3/1 | 95 | 7.5YR5/6 | 5 | C | M | Silt Loam | |
| 7-14" | 7.5YR5/1 | 90 | 7.5YR5/6 | 10 | C | M | Silt Loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2-T5-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263235 Long.: -76.504824 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland point taken to the east of the PFO portion of wetland W2-T5 and to the west of S2-T5.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No Hydrology

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2-T5-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 80 | Yes | FACU |
| 2 | *Acer rubrum* | 10 | No | FAC |
| 3 | *Betula lenta* | 10 | No | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Rhododendron maximum* | 5 | Yes | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 5 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Rhododendron maximum* | 5 | Yes | FAC |
| 2 | *Acer rubrum* | 5 | Yes | FAC |
| 3 | *Betula lenta* | 5 | Yes | FACU |
| 4 | *Mitchella repens* | 2 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 17 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 60.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** UP-W2-T5-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR2/1 | 100 | | | | | Silt Loam | organic layer |
| 2-8" | 7.5YR3/3 | 100 | | | | | Silt Loam | |
| 8-14" | 5YR4/16 | 100 | | | | | Silt Loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): Concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263054 Long.: -76.499462 Datum: NAD 83

Soil Map Unit Name Holly silt loam NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W4-T5-1a is located in the PEM portion of a PEM/PFO wetland complex which abuts S3-T5. The PEM portion of the wetland complex is located in an existing a pipeline right-of-way.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes X | No | ___ | Depth (inches): | 6" |
| Saturation present? (includes capillary fringe) | Yes x | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Scirpus cyperinus* | 40 | Yes | FACW |
| 2 *Onoclea sensibilis* | 40 | Yes | FACW |
| 3 *Persicaria sagittata* | 20 | No | OBL |
| 4 *Euthamia graminifolia* | 20 | No | FAC |
| 5 *Microstegium vimineum* | 20 | No | FAC |
| 6 *Carex lurida* | 10 | No | OBL |
| 7 *Tsuga canadensis* | 2 | No | FACU |
| 8 | | | |
| | 152 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W4-T5-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/1 | 85 | 7.5YR 5/8 | 15 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depressional Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.262675 Long.: -76.499731 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W4-T5-1c is located in the PFO portion of a PEM/PFO wetland complex. The PFO portion is located in a depressional area adjacent to a pipeline right-of-way and abuts S3-T5.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 0.5" |
| Water table present? | Yes | ___ | No | x | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | x | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicators included surface saturation and surface water.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 80 | Yes | FAC* |
| 2 | *Betula alleghaniensis* | 20 | Yes | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 10 | Yes | FAC* |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Impatiens capensis* | 20 | Yes | FACW |
| 2 | *Osmunda cinnamomea* | 10 | Yes | FACW |
| 3 | *Thelypteris noveboracensis* | 5 | No | FAC |
| 4 | *Tsuga canadensis* | 5 | No | FACU |
| 5 | *Dryopteris marginalis* | 2 | No | FACU |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 42 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

x 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)
*Eastern Hemlock show morphological adaptations consisting buttressed roots.

## SOIL

**Sampling Point:** W4-T5-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/1 | 98 | 7.5YR 5/6 | 2 | C | M | silt loam | oxidized roots |
| 6-14" | 5YR 6/1 | 80 | 7.5YR 5/6 | 20 | C | M | sandy loam | manganese concentrations |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- X Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Manganese deposits were present throughout the soil profile.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263112 Long.: -76.499451 Datum: NAD 83

Soil Map Unit Name Holly silt loam (Ho) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: An upland point taken to the west of the PEM portion of W4-T5.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 10 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Solidago canadensis* | 40 | Yes | FACU |
| 2 *Euthamia graminifolia* | 40 | Yes | FAC |
| 3 *Rubus hispidus* | 20 | No | FACW |
| 4 *Poaceae sp.* | 20 | No | |
| 5 *Dichanthelium clandestinum* | 2 | No | FAC |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 122 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | 20 | x 2 = | 40 | |
| FAC species | 42 | x 3 = | 126 | |
| FACU species | 40 | x 4 = | 160 | |
| UPL species | | x 5 = | | |
| Column totals | 102 | (A) | 326 | (B) |

Prevalence Index = B/A = 3.20

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W4-T5-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/3 | 100 | | | | | Silt loam | gravelly |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.2626 Long.: -76.499628 Datum: NAD 83

Soil Map Unit Name Holly silt loam NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland point located to the east of the PFO portion of W4-T5

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 80 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 80 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 10 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 10 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 20 | Yes | FACU |
| 2 *Acer rubrum* | 10 | Yes | FAC |
| 3 *Betula lenta* | 5 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 35 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 10 | x 3 = | 30 | |
| FACU species | 115 | x 4 = | 460 | |
| UPL species | | x 5 = | | |
| Column totals | 125 | (A) | 490 | (B) |

Prevalence Index = B/A = 3.92

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W4-T5-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | 100 | | | | | Sandy loam | organic |
| 2-14" | 7.5YR 5/6 | 100 | | | | | sandy loam | gravelly |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T5-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.262301 Long.: -76.503952 Datum: NAD 83

Soil Map Unit Name Albrights silt loam (ABC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil Y , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W1-T5-1c is a PFO wetland located on a terrace at the bottom of a hillslope. The wetland abuts S1-T5.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 0.5" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T5-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 50 | Yes | FAC* |
| 2 | *Betula nigra* | 20 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Carex crinita* | 50 | Yes | OBL |
| 2 | *Impatiens capensis* | 20 | Yes | FACW |
| 3 | *Pilea pumila* | 10 | No | FACW |
| 4 | *Dryopteris marginalis* | 5 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:
*Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.

## SOIL

**Sampling Point:** W1-T5-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 7.5YR3/1 | 100 | | | | | Clay Silt Loam | |
| 3-10" | 2.5YR4/6 | 100 | | | | | Clay Silt Loam | red parent material |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
_X_ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock layer
Depth (inches): 10"

**Hydric soil present?** Yes _x_ No ___

Remarks:
Problematic soils - red parent material

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T4-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 3 to 5 %

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.262686 Long.: -76.505191 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W2-T4-1a is located in the PEM portion of a PEM/PFO wetland complex. The PEM portion is located within an existing pipeline ROW. Wheel ruts were present throughout the wetland area. This wetland complex abuts stream channels S2-T2 and S8-T2. It is hydrologically connected to wetland W2-T2 via channel S8-T2.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes x No ___ Depth (inches): surface

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T4-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Scirpus cyperinus* | 20 | Yes | FACW |
| 2 *Juncus effusus* | 20 | Yes | FACW |
| 3 *Persicaria sagittata* | 20 | Yes | OBL |
| 4 *Scirpus atrovirens* | 20 | Yes | OBL |
| 5 *Leersia oryzoides* | 20 | Yes | OBL |
| 6 *Solidago rugosa* | 20 | Yes | FAC |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet).

## SOIL

**Sampling Point:** W2-T4-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10.5YR 4/2 | 90 | 7.5YR 5/6 | 10 | C | PL | gravelly silt loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/18/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T4-1c

Investigator(s): DW, CB, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.26299 Long.: -76.505137 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T4-1c is located in the PFO portion of a PEM/PFO wetland complex. This data point is located adjacent to the pipeline ROW, to the north. Buck Run (S3-T3) flows throughout the PEM portion of this wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 1" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T4-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 60 | Yes | FAC* |
| 2 | *Betula nigra* | 10 | No | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 10 | Yes | FAC* |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Osmunda cinnamomea* | 10 | Yes | FACW |
| 2 | *Tsuga canadensis* | 10 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 20 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:*Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.
**Ground was covered by 60% sphagnum moss.

## SOIL

**Sampling Point:** W2-T4-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | 10YR2/1 | 100 | | | | | Silt loam | organic |
| 1-12" | 10YR4/1 | 80 | 7.5YR5/6 | 20 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/18/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T4-2c

Investigator(s): DW, CB, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.262207 Long.: -76.504538 Datum: NAD 83

Soil Map Unit Name Albrights silt loam (AbC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T4-2c is located in the PFO portion of a PEM/PFO wetland complex. This data point is located adjacent to the pipeline ROW, to the south. Buck Run (S3-T3) flows throughout the PEM portion of this wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 1" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicator includes surface saturation and standing water.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T4-2c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 60 | Yes | FAC* |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 60 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 10 | Yes | FAC* |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 10 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Sambucus nigra* | 2 | Yes | FAC |
| 2 *Nasturtium officinale* | 2 | Yes | OBL |
| 3 *Viola sororia* | 1 | Yes | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 5** = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: *Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.
**Ground was covered by 20% sphagnum moss.

## SOIL

**Sampling Point:** W2-T4-2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 5YR5/2 | 95 | 5YR4/6 | 5 | C | M | loam | Manganese concentrations |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2-T4-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.26235 Long.: -76.504824 Datum: NAD 83

Soil Map Unit Name Albrights silt loam (AbC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland point located outside of W2-T4 in a forested area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No Hydrology present

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2-T4-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 50 | Yes | FACU |
| 2 *Betula lenta* | 20 | Yes | FACU |
| 3 *Acer rubrum* | 10 | No | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 80 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 20 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 20 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Dryopteris marginalis* | 2 | No* | FACU |
| 2 *Tsuga canadensis* | 1 | No* | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 3 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 93 | x 4 = | 372 |
| UPL species | | x 5 = | |
| Column totals | 103 (A) | | 402 (B) |

Prevalence Index = B/A = 3.90

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks

* Not considered in dominance test as stratum has less than 5% total cover

## SOIL

**Sampling Point:** UP-W2-T4-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR2/1 | 100 | | | | | Clay Silt Loam | organic layer |
| 2-14" | 5YR5/4 | 100 | | | | | Clay Silt Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/18/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T4-1c

Investigator(s): DW, CB, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263312 Long.: -76.505667 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W1-T4-1C is a PFO wetland located adjacent to an existing pipeline ROW in the floodway of Buck Run (S3-T3).

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T4-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 40 | Yes | FAC* |
| 2 | *Betula nigra* | 10 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 50 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 40 | Yes | FAC* |
| 2 | *Betula nigra* | 10 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 50 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Osmunda cinnamomea* | 10 | Yes | FACW |
| 2 | *Rubus hispidus* | 10 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 20** = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:. *Eastern Hemlock displayed morphological adaptations consisting of buttressed roots. FACU indicator was reassigned to FAC.
** Ground covered by 80% sphagnum moss

## SOIL

**Sampling Point:** W1-T4-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 7.5YR3/3 | 100 | | | | | Silt loam | |
| 2-12" | 10YR3/1 | 85 | 7.5YR5/6 | 15 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/18/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T4-1c

Investigator(s): DW, CB, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263295 Long.: -76.505535 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsely Vegetated Concave Surface |
| ___ Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| | |
|---|---|
| Field Observations:<br>Surface water present? Yes ___ No X Depth (inches): ___<br>Water table present? Yes ___ No X Depth (inches): ___<br>Saturation present? Yes ___ No X Depth (inches): ___<br>(includes capillary fringe) | **Wetland hydrology present?** Yes ___ No X |
| Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | |
| Remarks: No hydrology present | |

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T4-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 60 | Yes | FACU |
| 2 *Acer rubrum* | 20 | Yes | FAC |
| 3 *Betula lenta* | 20 | Yes | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Tsuga canadensis* | 20 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 20 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Dennstaedtia punctilobula* | 3 | Yes | FACU |
| 2 *Betula lenta* | 2 | Yes | FACU |
| 3 *Acer rubrum* | 1 | No | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 6 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

| | | |
|---|---|---|
| Number of Dominant Species that are OBL, FACW, or FAC: | 1 | (A) |
| Total Number of Dominant Species Across all Strata: | 6 | (B) |
| Percent of Dominant Species that are OBL, FACW, or FAC: | 17.00% | (A/B) |

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 21 | x 3 = | 63 | |
| FACU species | 105 | x 4 = | 420 | |
| UPL species | | x 5 = | | |
| Column totals | 126 | (A) | 483 | (B) |

Prevalence Index = B/A = 3.83

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W1-T4-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | 10YR3/1 | 100 | | | | | Silt loam | |
| 1-12" | 10YR4/3 | 100 | | | | | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/22/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T3-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.262127 Long.: -76.505443 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W3-T3-1c is located within a PFO wetland located adjacent to an existing pipeline ROW. Buck Run (S3-T3) flows throughout the wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicator includes water stained leaves and oxidized rhizospheres.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T3-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 50 | Yes | FAC* |
| 2 | *Acer rubrum* | 20 | Yes | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 20 | Yes | FAC* |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Osmunda cinnamomea* | 50 | Yes | FACW |
| 2 | *Thelypteris noveboracensis* | 20 | Yes | FAC |
| 3 | *Carex intumescens* | 10 | No | FACW |
| 4 | *Onoclea sensibilis* | 2 | No | FACW |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 82** | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: *Eastern Hemlock displayed morphological adaptations consisting of buttressed roots and FACU indicator was reassigned to FAC.
**Sphagnum moss present over 50% of the site.

## SOIL

**Sampling Point:** W3-T3-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR4/1 | 80 | 7.5YR5/6 | 20 | C | M | Sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T3-1a

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 3 to 5 %

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.262654 Long.: -76.506462 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T3-1a is located within a PEM wetland located within an existing pipeline ROW. Wheel ruts were present throughout the wetland area. This is an isolated wetland with no surface connection to other waters.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | | |
| Water table present? | Yes x | No ___ | Depth (inches): surface | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T3-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Scirpus atrovirens* | 25 | Yes | OBL |
| 2 *Euthamia graminifolia* | 20 | Yes | FAC |
| 3 *Solidago rugosa* | 20 | Yes | FAC |
| 4 *Microstegium vimineum* | 15 | No | FAC |
| 5 *Juncus effusus* | 10 | No | FACW |
| 6 *Rosa Multiflora* | 5 | No | FACU |
| 7 *Symphyotrichum novae-angliae* | 3 | No | FACW |
| 8 | | | |
| | 98 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 0 _____

UPL species _____ x 5 0 _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet).

## SOIL

**Sampling Point:** W2-T3-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10.5YR 4/2 | 90 | 7.5YR 5/6 | 10 | C | PL | gravelly silt loam | oxidized roots / rock refusal |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 10"

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T3-1a

Investigator(s): JH, PF Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 3 to 8 %

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.262521 Long.: -76.511498 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W1-T3-1a was taken on an existing pipeline right-of-way within a hay field. This data point is located just to the east of W1-T2

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T3-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Poa pratensis* | 25 | Yes | FACU |
| 2 *Rumex crispus* | 20 | Yes | FAC |
| 3 *Trifolium repens* | 20 | Yes | FACU |
| 4 *Persicaria pensylvanica* | 15 | No | FACW |
| 5 *Solanum carolinense* | 10 | No | FACU |
| 6 *Plantago major* | 10 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 65 | x 4 = | 260 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 350 (B) |

Prevalence Index = B/A = 3.50

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W1-T3-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 7.5YR 4/4 | 100 | | | | | gravelly silt loam | rock refusal at 10" |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock refusal
Depth (inches): 10"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/18/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T2-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.261368 Long.: -76.512821 Datum: NAD 83

Soil Map Unit Name Lech kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T2-1a is a PEM wetland located adjacent to a pipeline ROW and an access road. This wetland abuts S8-T2 and S9-T2

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T2-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Impatiens capensis* | 40 | Yes | FACW |
| 2 *Euthamia graminifolia* | 25 | Yes | FAC |
| 3 *Poa trivialis* | 25 | Yes | FACW |
| 4 *Symphyotrichum novae-angliae* | 20 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W2-T2-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR3/2 | 98 | 5YR5/6 | 2 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/18/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2-T2-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.261561 Long.: -76.512724 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2-T2-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Euthamia graminifolia* | 50 | Yes | FAC |
| 2 *Solidago canadensis* | 40 | Yes | FACU |
| 3 *Potentilla simplex* | 20 | No | FACU |
| 4 *Achillea millefolium* | 5 | No | FACU |
| 5 *Taraxacum officinale* | 5 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 50 | x 3 = | 150 |
| FACU species | 70 | x 4 = | 280 |
| UPL species | | x 5 = | |
| Column totals | 120 (A) | | 430 (B) |

Prevalence Index = B/A = 3.58

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W2-T2-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/2 | 100 | | | | | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T3-1a

Investigator(s): JH, PF Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 3 to 8 %

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.262521 Long.: -76.511498 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W1-T3-1a was taken on an existing pipeline right-of-way within a hay field. This data point is located just to the east of W1-T2

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T3-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Poa pratensis* | 25 | Yes | FACU |
| 2 *Rumex crispus* | 20 | Yes | FAC |
| 3 *Trifolium repens* | 20 | Yes | FACU |
| 4 *Persicaria pensylvanica* | 15 | No | FACW |
| 5 *Solanum carolinense* | 10 | No | FACU |
| 6 *Plantago major* | 10 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 65 | x 4 = | 260 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 350 (B) |

Prevalence Index = B/A = 3.50

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W1-T3-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 7.5YR 4/4 | 100 | | | | | gravelly silt loam | rock refusal at 10" |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock refusal
Depth (inches): 10"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T2-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.26176 Long.: -76.51359 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W1-T2-1a is located within the PEM portion of a PEM/PFO wetland complex. The PEM portion of the wetland is located on a pipeline ROW. This wetland complex abuts stream channels S2-T2 and S8-T2. It is hydrologically connected to wetland W2-T2 via channel S8-T2.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 1" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T2-1a

| Tree Stratum (Plot Size: 30') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size: 15') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size: 5') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Carex crinita* | 40 | Yes | OBL |
| 2 *Symphyotrichum novae-angliae* | 25 | Yes | FACW |
| 3 *Polygonum sagittatum* | 25 | Yes | OBL |
| 4 *Euthamia graminifolia* | 20 | No | FAC |
| 5 *Juncus effusus* | 15 | No | FACW |
| 6 *Onoclea sensibilis* | 10 | No | FACW |
| 7 *Scirpus cyperinus* | 5 | No | FACW |
| 8 | | | |
| | 140 = | Total Cover | |

| Woody Vine Stratum (Plot Size: 30') | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species ____ x 1 = ____

FACW species ____ x 2 = ____

FAC species ____ x 3 = ____

FACU species ____ x 4 = ____

UPL species ____ x 5 = ____

Column totals ____ (A) ____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks:

## SOIL

**Sampling Point:** W1-T2-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR4/2 | 90 | 7.5YR5/6 | 10 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T2-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.262308 Long.: -76.513672 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W1-T2-1C is a located within the PFO portion of a PEM/PFO wetland complex. The PFO portion of the wetland is located adjacent to an existing pipeline ROW. This wetland complex abuts stream channels S2-T2 and S8-T2. It is hydrologically connected to wetland W2-T2 via channel S8-T2.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 1" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicator includes surface water, saturation, and water-stained leaves.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T2-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Acer rubrum* | 60 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 60 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Aronia melanocarpa* | 30 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 30 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Glyceria canadensis* | 20 | Yes | OBL |
| 2 *Microstegium vimineum* | 5 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 25 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T2-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR4/1 | 60 | 7.5YR5/6 | 40 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T2-2c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.262309 Long.: -76.513579 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W1-T2-2C is located in the PFO portion of a PEM/PFO wetland complex. The PFO portion is located adjacent to a pipeline ROW to the north. This wetland complex abuts stream channels S2-T2 and S8-T2. It is hydrologically connected to wetland W2-T2 via channel S8-T2.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicator includes surface saturation.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T2-2c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Acer rubrum* | 30 | Yes | FAC |
| 2 *Betula lenta* | 15 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 45 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Euthamia graminifolia* | 60 | Yes | FAC |
| 2 *Symphyotrichum novae-angliae* | 30 | Yes | FACW |
| 3 *Onoclea sensibilis* | 15 | No | FACW |
| 4 *Solidago rugosa* | 5 | No | FAC |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks:

## SOIL

**Sampling Point:** W1-T2-2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR4/2 | 95 | 7.5YR5/6 | 5 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T2-1a

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.261949 Long.: -76.512981 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: An upland point located just outside of Wetland W1-T2

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T2-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Phleum pratense* | 40 | Yes | FACU |
| 2 *Euthamia graminifolia* | 30 | Yes | FAC |
| 3 *Solidago canadensis* | 10 | No | FACU |
| 4 *Poa pratensis* | 10 | No | FACU |
| 5 *Lotus corniculatus* | 5 | No | FACU |
| 6 *Prunella vulgaris* | 5 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 30 | x 3 = | 90 |
| FACU species | 70 | x 4 = | 280 |
| UPL species | | x 5 = | |
| Column totals | 100 (A) | | 370 (B) |

Prevalence Index = B/A = 3.70

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W1-T2-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 5YR4/3 | 98 | 5YR5/6 | 2 | C | M | Clay Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___.___ No ___X___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T2-1c

Investigator(s): DW, CB Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.262216 Long.: -76.513562 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: Upland point located outside of the PFO portion of wetland W1-T2 | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T2-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 30 | Yes | FAC |
| 2 | *Pinus strobus* | 30 | Yes | FACU |
| 3 | *Betula lenta* | 20 | Yes | FACU |
| 4 | *Tsuga canadensis* | 20 | Yes | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Hamamelis virginiana* | 40 | Yes | FACU |
| 2 | *Aronia melanocarpa* | 5 | No | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 45 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Dennstaedtia punctilobula* | 5 | Yes | FACU |
| 2 | *Smilax rotundifolia* | 2 | Yes | FAC |
| 3 | *Hamamelis virginiana* | 1 | No | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 8 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 28.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 37 | x 3 = | 111 | |
| FACU species | 116 | x 4 = | 464 | |
| UPL species | | x 5 = | | |
| Column totals | 153 | (A) | 575 | (B) |

Prevalence Index = B/A = 3.76

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W1-T2-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR4/3 | 100 | | | | | Clay Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W6-T1-1c

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.261247 Long.: -76.514013 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W6-T1-1C is a PFO wetland located adjacent to a pipeline ROW and is upstream from a pond. This wetland abuts S2-T2.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 2" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W6-T1-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 50 | Yes | FAC |
| 2 | *Betula lenta* | 20 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Osmunda cinnamomea* | 20 | Yes | FACW |
| 2 | *Sambucus nigra* | 10 | Yes | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 30 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | 40 |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W6-T1-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 7.5YR2.5/1 | 100 | | | | | Fibric | organic |
| 3-6" | 7.5YR3/2 | 100 | | | | | loam | |
| 6-12" | 7.5YR6/1 | 60 | 7.5YR5/8 | 40 | C | M | loam | manganese |
| | | | | | | | | |

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- X Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP4-T1

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Flat hilltop Local relief (concave, convex, none): None Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.262088 Long.: -76.517699 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland point located in a forested area adjacent to an existing pipeline ROW

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP4-T1

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 50 | Yes | FACU |
| 2 | *Quercus alba* | 20 | Yes | FACU |
| 3 | *Quercus rubra* | 20 | Yes | FACU |
| 4 | *Prunus serotina* | 10 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Kalmia latifolia* | 50 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 50 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Kalmia latifolia* | 20 | Yes | FACU |
| 2 | *Lycopodium dendroideum* | 15 | Yes | FACU |
| 3 | *Sassafras albidum* | 5 | No | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 40 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | | x 3 = | | |
| FACU species | 190 | x 4 = | 760 | |
| UPL species | | x 5 = | | |
| Column totals | 190 | (A) | 760 | (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP4-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR2/1 | 100 | | | | | silt loam (detritus) | organic |
| 2-5" | 7.5YR3/3 | 100 | | | | | silt loam | |
| 5-12" | 7.5YR4/6 | 100 | | | | | clay loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP5-T1

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): None Slope (%): 3-5

Subregion (LRR or MLRA): MLRA Lat.: 41.260953 Long.: -76.520881 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland point located in forested area adjacent to an existing pipeline ROW

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP5-T1

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Quercus rubra* | 40 | Yes | FACU |
| 2 | *Tsuga canadensis* | 30 | Yes | FACU |
| 3 | *Quercus alba* | 20 | Yes | FACU |
| 4 | *Quercus montana* | 20 | Yes | UPL |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 110 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Kalmia latifolia* | 20 | Yes | FACU |
| 2 | *Tsuga canadensis* | 10 | Yes | FACU |
| 3 | *Hamamelis virginiana* | 10 | Yes | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 40 | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Kalmia latifolia* | 20 | Yes | FACU |
| 2 | *Lycopodium dendroideum* | 5 | No | FACU |
| 3 | *Acer rubrum* | 5 | No | FAC |
| 4 | *Vaccinium angustifolium* | 5 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 35 | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 5 | x 3 = | 15 | |
| FACU species | 160 | x 4 = | 640 | |
| UPL species | 20 | x 5 = | 100 | |
| Column totals | 185 | (A) | 755 | (B) |

Prevalence Index = B/A = 4.08

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP5-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR2/1 | 100 | | | | | silt loam | organic |
| 2-4" | 5YR4/3 | 100 | | | | | silt loam | |
| 4-12" | 5YR4/4 | 100 | | | | | clay loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T1-1a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.260667 Long.: -76.5256 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W1-T1-1a is located within the PEM portion of a PEM/PFO wetland complex located on the edge of a field and abuts stream channel S1-T3 and outlets to S2-T1 though a culvert.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 1 |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T1-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Vaccinium corymbosum* | 5 | Yes | FACW |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 5 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Myosotis scorpioides* | 60 | Yes | OBL |
| 2 *Sparganium americanum* | 45 | Yes | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 105 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T1-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 7.5YR3/2 | 100 | | | | | Muck | |
| 8-12" | 7.5YR4/1 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T1-1d

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.260643 Long.: -76.525654 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W1-T1-1d is located within the POW portion of a PEM/POW wetland complex. A manmade dam is present. The wetland outlets to S2-T1 through a culvert.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): ≤ 48 |
| Water table present? | Yes | X | No | ___ | Depth (inches): surface |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T1-1d

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 5 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Sparganium americanum* | 10 | Yes | OBL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 10* = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | x 1 = | | |
| FACW species | x 2 = | | |
| FAC species | x 3 = | | |
| FACU species | x 4 = | | |
| UPL species | x 5 = | | |
| Column totals | (A) | (B) | |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: *Algae layer covering pond

## SOIL

**Sampling Point:** W1-T1-1d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 7.5YR3/2 | 100 | | | | | | muck |
| 8-12" | 7.5YR4/1 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

Soil test pit was taken along the banks of the pond. Due to the depth of water, a soil test pit was not taken within the open water and hydric soils were assumed.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/23/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T3-1c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): none Slope (%): 3 to 8 %

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.261098 Long.: -76.524838 Datum: NAD 83

Soil Map Unit Name Wellsboro channery silt loam (WIC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: UP-W1-T3-1c was taken on an existing pipeline right-of-way to the east of PEM portion of W3-T1 | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T3-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Lotus corniculatus* | 30 | Yes | FACU |
| 2 *Plantago major* | 20 | Yes | FACU |
| 3 *Phleum pratense* | 10 | No | FACU |
| 4 *Daucus carota* | 10 | No | UPL |
| 5 *Lolium perenne* | 10 | No | FACU |
| 6 *Rudbeckia hirta* | 10 | No | FACU |
| 7 *Plantago lanceolata* | 5 | No | UPL |
| 8 *Achillea millefolium* | 5 | No | FACU |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 85 | x 4 = | 340 |
| UPL species | 15 | x 5 = | 75 |
| Column totals | 100 (A) | | 415 (B) |

Prevalence Index = B/A = 4.15

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W1-T3-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR 4/4 | 100 | | | | | gravelly silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T1-1a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.260642 Long.: -76.525962 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T1-1a is located in a PEM wetland abutting S1-T1 and lies adjacent to W1-T1.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T1-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 5 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Carex lurida* | 40 | Yes | OBL |
| 2 *Carex vulpinoidea* | 25 | Yes | OBL |
| 3 *Persicaria sagittata* | 25 | Yes | OBL |
| 4 *Symphyotrichum novae-angliae* | 20 | No | FACW |
| 5 *Juncus effusus* | 10 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

## SOIL

**Sampling Point:** W2-T1-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 5YR4/2 | 100 | | | | | Silt loam | |
| 3-12" | 5YR4/1 | 95 | 5YR4/6 | 5 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T1-1a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.261005 Long.: -76.525697 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W3-T1-1a is located in the PEM portion of a PEM/PSS/PFO wetland complex. The PEM portion is located within an existing pipeline ROW and abuts which S1-T1 which flows throughout this portion of the wetland complex. The PEM portion of the complex also abuts S1-T3 and S2-T3.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T1-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Equisetum arvense* | 30 | Yes | FAC |
| 2 *Onoclea sensibilis* | 30 | Yes | FACW |
| 3 *Euthamia graminifolia* | 20 | No | FAC |
| 4 *Solidago odora* | 20 | No | UPL |
| 5 *Carex crinita* | 20 | No | OBL |
| 6 *Symphyotrichum novae-angliae* | 20 | No | FACW |
| 7 *Juncus tenuis* | 20 | No | FAC |
| 8 *Eupatorium perfoliatum* | 5 | No | FACW |
| | 165 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

## SOIL

**Sampling Point:** W3-T1-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR3/2 | 100 | | | | | loam | Organic |
| 3-12" | 7.5YR4/2 | 95 | 5YR4/6 | 5 | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T1-1b

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.260951 Long.: -76.525652 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W3-T1-1b is located in the PSS portion a PEM/PSS/PFO wetland complex along an existing pipeline ROW. The PSS portion of the wetland abuts S1-T1.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 1" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T1-1b

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Salix interior* | 80 | Yes | FACW |
| 2 | *Elaeagnus umbellata* | 5 | No | UPL |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 85 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Equisetum arvense* | 30 | Yes | FAC |
| 2 | *Onoclea sensibilis* | 30 | Yes | FACW |
| 3 | *Euthamia graminifolia* | 10 | No | FAC |
| 4 | *Juncus effusus* | 10 | No | FACW |
| 5 | *Symphyotrichum novae-angliae* | 10 | No | FACW |
| 6 | *Impatiens capensis* | 5 | No | FACW |
| 7 | | | | |
| 8 | | | | |
| | | 95 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

## SOIL

**Sampling Point:** W3-T1-1b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR3/2 | 100 | | | | | loam | Organic |
| 3-12" | 7.5YR4/2 | 95 | 5YR4/6 | 5 | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T1-2a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA Lat.: 41.260833 Long.: -76.525757 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes x No ___

Remarks: W3-T1-2a is located in the PEM portion of a PEM/PSS/PFO wetland complex. The PEM portion is located within an existing pipeline ROW and abuts S1-T1 which flows throughout this portion of the wetland complex. The PEM portion of the complex abuts S1-T3 and S2-T3.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Primary hydrology indicator includes surface saturation. Water seeping from pond and hillside.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T1-2a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Populus tremuloides* | 5 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 5 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 60 | Yes | FACW |
| 2 *Euthamia graminifolia* | 40 | Yes | FAC |
| 3 *Impatiens capensis* | 10 | No | FACW |
| 4 *Clematis virginiana* | 10 | No | FAC |
| 5 *Salix interior* | 5 | No | FACW |
| 6 *Galium aparine* | 5 | No | FACU |
| 7 *Acer rubrum* | 2 | No | FAC |
| 8 | | | |
| | 132 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

## SOIL

**Sampling Point:** W3-T1-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Color (moist) Color (moist) | Color (moist) % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/2 | 80 | 5YR4/6 | 20 | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/17/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T1-1c

Investigator(s): PF, RN Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): hill slope Local relief (concave, convex, none): none Slope (%): 8 to 15%

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.26136 Long.: -76.52532 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loams (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W3-T1-1c represents a PFO portion of W3-T1, a PEM/PSS/PFO wetland complex, in a forested area adjacent to an existing pipeline right-of-way. S1-T1 flows throughout the wetland complex. This complex also S1-T3 and S2-T3.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- x Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- x Drainage Patterns (B10)
- x Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | | |
| Water table present? | Yes x | No ___ | Depth (inches): surface | **Wetland hydrology present?** | Yes x No ___ |
| Saturation present? (includes capillary fringe) | Yes x | No ___ | Depth (inches): surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T1-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Betula nigra* | 60 | Yes | FACW |
| 2 | *Acer Rubrum* | 10 | No | FAC |
| 3 | *Populus tremuloides* | 10 | No | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Salix interior* | 20 | Yes | FACW |
| 2 | *Betula nigra* | 10 | Yes | FACW |
| 3 | *Sambucus nigra* | 10 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 40 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Euthamia graminifolia* | 30 | Yes | FAC |
| 2 | *Solidago rugosa* | 30 | Yes | FAC |
| 3 | *Impatiens capensis* | 10 | No | FACW |
| 4 | *Symphyotrichum novae-angliae* | 10 | No | FACW |
| 5 | *Ranunculus acris* | 5 | No | FAC |
| 6 | *Onoclea sensibilis* | 5 | No | FACW |
| 7 | *Lycopus americanus* | 5 | No | OBL |
| 8 | | | | |
| | | 95 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet).

## SOIL

**Sampling Point:** W3-T1-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR 4/2 | 95 | 5YR 4/6 | 5 | C | PL | loam | oxidized roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- x Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP2-T1

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.261341 Long.: -76.526409 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shall silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland point within an agricultural field.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP2-T1

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Trifolium repens* | 50 | Yes | FACU |
| 2 | *Daucus carota* | 20 | Yes | UPL |
| 3 | *Phleum pratense* | 20 | Yes | FACU |
| 4 | *Lotus corniculatus* | 20 | Yes | FACU |
| 5 | *Plantago lanceolata* | 15 | No | UPL |
| 6 | *Setaria italica* | 10 | No | FACU |
| 7 | *Trifolium pratense* | 10 | No | FACU |
| 8 | | | | |
| | | 145 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | | x 3 = | | |
| FACU species | 110 | x 4 = | 440 | |
| UPL species | 35 | x 5 = | 175 | |
| Column totals | 145 | (A) | 615 | (B) |

Prevalence Index = B/A = 4.24

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP2-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/3 | 100 | | | | | silt loam | gravelly, rock refusal |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP3-T1

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-5

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.263063 Long.: -76.528893 Datum: NAD 83

Soil Map Unit Name Klinesville shaly silt loam (KID) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: Upland point in an agricultural field | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP3-T1

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Solidago canadensis* | 50 | Yes | FACU |
| 2 | *Symphyotrichum ericoides* | 20 | Yes | FACU |
| 3 | *Elaeagnus umbellata* | 20 | Yes | UPL |
| 4 | *Dactylis glomerata* | 10 | No | FACU |
| 5 | *Schizachyrium scoparium* | 10 | No | FACU |
| 6 | *Rubus flagellaris* | 10 | No | FACU |
| 7 | *Solidago rugosa* | 5 | No | FAC |
| 8 | | | | |
| | | 125 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 5 | x 3 = | 15 |
| FACU species | 100 | x 4 = | 400 |
| UPL species | 20 | x 5 = | 100 |
| Column totals | 135 (A) | | 515 (B) |

Prevalence Index = B/A = 3.81

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP3-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/3 | 100 | | | | | silt loam | gravelly, rock refusal |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W5-T1-1a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): gradual hillslope Local relief (concave, convex, none): convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.25857 Long.: -76.512687 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W5-T1-1a is located in a PEM wetland located along the edge of an existing access road. This wetland abuts S5-T1.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W5-T1-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Solidago rugosa* | 50 | Yes | FAC |
| 2 *Symphyotrichum novae-angliae* | 40 | Yes | FACW |
| 3 *Impatiens capensis* | 40 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 130 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W8-T1-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/2 | 98 | 5YR4/6 | 2 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W7-T1-1d

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Gradual hillslope Local relief (concave, convex, none): none Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.255679 Long.: -76.510821 Datum: NAD 83

Soil Map Unit Name Leck kill channery silt loam (LkD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W7-T1-1d is located in a stream-fed POW wetland (Pond) that is adjacent to an existing access road.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsely Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| X Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): | ≥ 36" |
| Water table present? | Yes | X | No | ___ | Depth (inches): | surface |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W7-T1-1d

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Sparganium americanum* | 10 | Yes* | OBL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 10 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: * Sparsely vegetated area; was dominated by 3 feet or more of standing water

## SOIL

**Sampling Point:** W7-T1-1d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | See Remarks |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Due to depth of standing water, no soil data was obtained.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W5-T1-1a

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): gradual hillslope Local relief (concave, convex, none): convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.25857 Long.: -76.512687 Datum: NAD 83

Soil Map Unit Name Weikert and Klinesville shaly silt loam (WkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W5-T1-1a is located in a PEM wetland located along the edge of an existing access road. This wetland abuts S5-T1.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W5-T1-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Solidago rugosa* | 50 | Yes | FAC |
| 2 *Symphyotrichum novae-angliae* | 40 | Yes | FACW |
| 3 *Impatiens capensis* | 40 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 130 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W5-T1-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR4/2 | 98 | 5YR4/6 | 2 | C | M | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Lycoming County Sampling Date: 10/15/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP1-T1

Investigator(s): DW, JH Section, Township, Range: Jordan Township

Landform (hillslope, terrace, etc.): Hilltop Local relief (concave, convex, none): Convex Slope (%): 0-3

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.262672 Long.: -76.541102 Datum: NAD 83

Soil Map Unit Name Leck Kill channery silt loam (LkB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland point located in an agricultural field proposed as a staging area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No x | Depth (inches): ___ | |
| Water table present? | Yes ___ | No x | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No x | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP1-T1

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Daucus carota* | 50 | Yes | UPL |
| 2 | *Potentilla simplex* | 20 | Yes | FACU |
| 3 | *Setaria italica* | 20 | Yes | FACU |
| 4 | *Plantago lanceolata* | 15 | No | UPL |
| 5 | *Trifolium repens* | 10 | No | FACU |
| 6 | *Solidago rugosa* | 10 | No | FAC |
| 7 | *Euthamia graminifolia* | 5 | No | FAC |
| 8 | *Solidago canadensis* | 5 | No | FACU |
| | | 135 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | = | Total Cover | |

**Dominance Test Worksheet**

| | | |
|---|---|---|
| Number of Dominant Species that are OBL, FACW, or FAC: | 0 | (A) |
| Total Number of Dominant Species Across all Strata: | 3 | (B) |
| Percent of Dominant Species that are OBL, FACW, or FAC: | 0.00% | (A/B) |

**Prevalence Index Worksheet**

| Total % Cover of: | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 15 | x 3 = | 45 | |
| FACU species | 55 | x 4 = | 220 | |
| UPL species | 65 | x 5 = | 325 | |
| Column totals | 135 | (A) | 590 | (B) |
| Prevalence Index = B/A = | | | 4.37 | |

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP1-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 5YR4/4 | 100 | | | | | silt loam | |
| 10-12" | 5YR5/4 | 100 | | | | | silt loam | gravelly |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Columbia County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP1-T7

Investigator(s): DW, JH Section, Township, Range: Jackson Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3-12

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.267987 Long.: -76.435866 Datum: NAD 83

Soil Map Unit Name Lackawanna channery loam, moderately eroded (LaB2) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-DP1-T7 was taken on in a restored pipeyard.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP1-T7

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Lolium perenne* | 40 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 40 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 40 | x 4 = | 160 |
| UPL species | | x 5 = | |
| Column totals | 40 (A) | | 160 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-T7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 7.5YR 4/3 | 100 | | | | | gravelly silt loam | rock fragments present, refusal at 10" |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Benton Loop City/County: Columbia County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP2-T7

Investigator(s): DW, JH Section, Township, Range: Jackson Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3-12

Subregion (LRR or MLRA): MLRA 147 Lat.: 41.267987 Long.: -76.435866 Datum: NAD 83

Soil Map Unit Name Lackawanna channery loam, moderately eroded (LaB2) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-DP1-T7 was taken on in a restored pipeyard.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No x Depth (inches): ___

Water table present? Yes ___ No x Depth (inches): ___

Saturation present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology was present.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP2-T7

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 *Lolium perenne* | 30 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 30 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 30 | x 4 = | 120 | |
| UPL species | | x 5 = | | |
| Column totals | 30 | (A) | 120 | (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP2-T7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR 4/3 | 100 | | | | | gravelly silt loam | rock fragments present, refusal at 12" |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 12"

**Hydric soil present?** Yes ___ No X

Remarks:

**STREAM ID:** S1-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/22/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to Southwest

**Width (ft) (water's edge to water's edge):** 2'-10

**Width (ft) (bank to bank):** 2'-10'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☑ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:

Width of riparian corridor (ft): 2ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☑ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

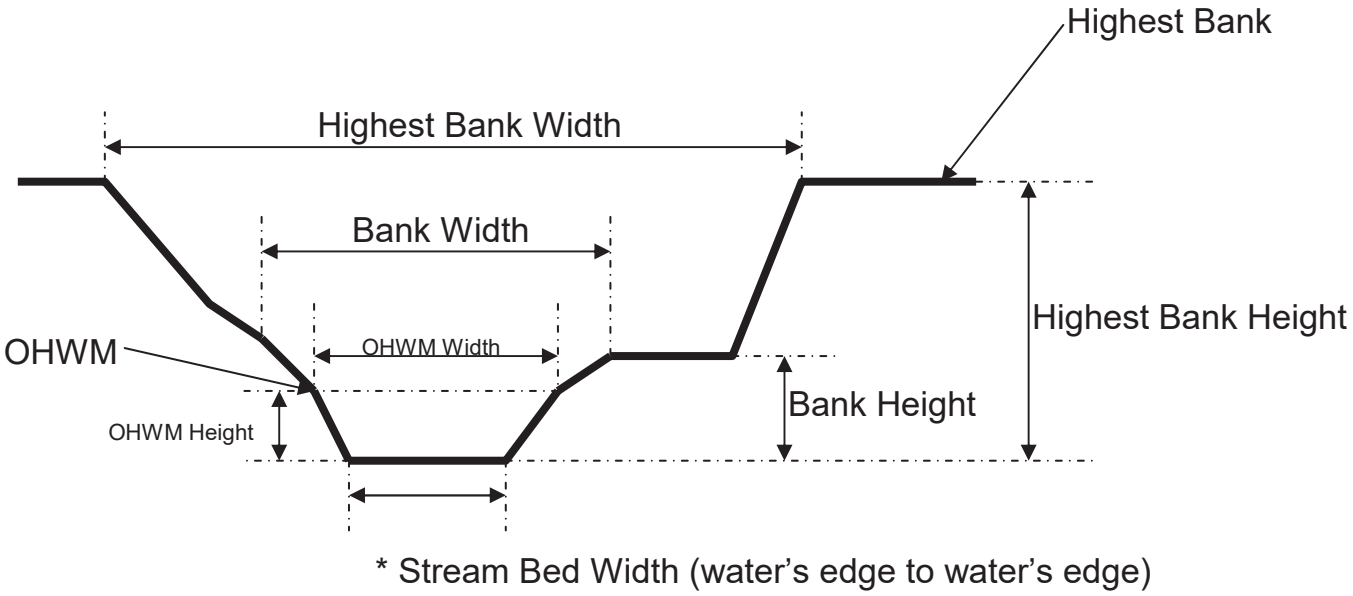
**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S1-T6 is a headwater stream that starts at a spring.




*Stream bed width is variable

**DEFINITIONS:**

**Perennial:** has flowing water year-round during a typical year.

**Intermittent:** has flowing water during certain times of the year, when groundwater provides water for stream flow.

**Ephemeral:** has flowing water only during, and for a short duration after, precipitation events in a typical year.

**Run**: A reach of stream characterized by fast flowing low turbulence water.

**Riffle:** A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.

**Pool:** A reach of stream that is characterized by deep low velocity water and a smooth surface.

**STREAM ID:** S1-T7

**STREAM DATA**

☑ ROW ☐ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☐ UNNAMED ☑ NAMED: Little Fishing Creek

**Date:** 3/26/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** South

**Width (ft) (water's edge to water's edge):** 5-25'

**Width (ft) (bank to bank):** 5-25'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☑ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other_____

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-4'

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-4'

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**_____
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☑ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:_____

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**_____

**Highest Left Bank Height*:**_____
**Highest Left Bank Slope*:**_____
**Highest Right Bank Height*:**_____
**Highest Right Bank Slope*:**_____
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-_____
☐ no
**If yes, list:**
Eastern hemlock (Tsuga canadensis); white pine (Pinus strobus); Black birch (Betula lenta)

**Width of riparian corridor (ft):**_____

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):_____

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:_____
☐ man-altered – Explain:_____

**NOTES:**
Erosion observed within the existing pipeline ROW only. ATV tracks were also observed within the existing pipeline ROW. The channel is approximately 15-25' outside of the pipeline ROW; within the ROW the channel narrows to 3-5' wide.

**STREAM ID:** S2-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/22/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** Southeast to northwest

**Width (ft) (water's edge to water's edge):** 2'-4'

**Width (ft) (bank to bank):** 2'-6'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☑ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Salix interior, Populus tremuloides, Pinus strobus, No riparian vegetation on existing pipeline ROW.

**Width of riparian corridor (ft):** 10-150+ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
**If yes, list:**
Has potential for fish - None were observed.

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S2-T6 is a headwater stream that starts at a spring.

**STREAM ID:** S3-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/22/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** South to north

**Width (ft) (water's edge to water's edge):** 2'-4'

**Width (ft) (bank to bank):** 2'-6'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Pinus strobus,
No riparian vegetation on existing pipeline ROW.

Width of riparian corridor (ft): 150ft + to NE

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: A spring that was likely excavated begins the channel

**NOTES:**
S3-T6 starts at a spring and flows into S4-T6. A wetland fringe is located on most of the stream channel (W7-T6).

**STREAM ID:** S5-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/22/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** South to north

**Width (ft) (water's edge to water's edge):** 1'-3'

**Width (ft) (bank to bank):** 1'-3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 1'
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:
Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Pinus strobus,
No riparian vegetation on existing pipeline ROW.

**Width of riparian corridor (ft):** 150ft + to NE

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Potentially an excavated roadside ditch

**NOTES:**
S5-T6 starts at a culvert and flows into S4-T6. A small wetland fringe (W12-T6) is located on the eastern side of the stream channel.

**STREAM ID:** S4-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☐ UNNAMED ☑ NAMED: Little Muncy Creek

**Date:** 10/22/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** east to west

**Width (ft) (water's edge to water's edge):** 16'-25'

**Width (ft) (bank to bank):** 16-25'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☑ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other_____

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 5-8
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2-8
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**_____
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☑ Undercutting ☐ Impact from Cattle

☐ Other:_____

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:_____

Highest Left Bank Height*:_____
Highest Left Bank Slope*:_____
Highest Right Bank Height*:_____
Highest Right Bank Slope*:_____
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-_____
☐ no
If yes, list:
Tsuga canadensis, Pinus strobilus

Width of riparian corridor (ft): 50ft +

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):_____

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:_____
☐ man-altered – Explain:_____

**NOTES:**
S4-T6 is the headwater of Little Muncy Creek and is a perennial stream channel.

**STREAM ID:** S6-T5

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2-6ft

**Width (ft) (bank to bank):** 3-7ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Betula lenta, Tsuga canadensis, Acer rubrum, Fagus grandifolia

Width of riparian corridor (ft): 5ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Stream originates from a spring.

**STREAM ID:** S6-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** north to south

**Width (ft) (water's edge to water's edge):** 5'-10'

**Width (ft) (bank to bank):** 5-10'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☑ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2-4
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2-4
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis. No riparian vegetation was present on the existing pipeline ROW.

Width of riparian corridor (ft): 150ft + off ROW

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S6-T6 is the start of a perennial stream channel that flows into Little Muncy Creek outside of the investigation area.

**STREAM ID:** S8-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** east to west

**Width (ft) (water's edge to water's edge):** 2'-3'

**Width (ft) (bank to bank):** 2'-3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☑ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis.

Width of riparian corridor (ft): 50ft +

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S8-T6 starts at a culvert and drains to W16-T6. No water was observed in the channel.

**STREAM ID:** S10-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** east to west

**Width (ft) (water's edge to water's edge):** 2'-3'

**Width (ft) (bank to bank):** 2'-3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis.

Width of riparian corridor (ft): 125ft +

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: The channel begins at a culvert and ends within 67'

**NOTES:**
S10-T6 is an ephemeral channel that begins at a culvert.

**STREAM ID:** S9-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** east to west

**Width (ft) (water's edge to water's edge):** 2'-3'

**Width (ft) (bank to bank):** 2'-3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis.

Width of riparian corridor (ft): 125ft +

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S9-T6 connects W17-T6 and W16-T6. No water was observed in the channel.

**STREAM ID:** S7-T6

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, RN

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** east to west

**Width (ft) (water's edge to water's edge):** 2'-6'

**Width (ft) (bank to bank):** 2-6
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☑ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2-8
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2-8
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis.

Width of riparian corridor (ft): 150ft +

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
If yes, list:
Has potential for fish but none were observed.

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S7-T6 starts at several springs and travels in a swale feature through W16-T6 and W15-T6.

**STREAM ID:** S2-T5

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☐ UNNAMED ☑ NAMED: Little Muncy Creek

**Date:** 10/22/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 12-30ft

**Width (ft) (bank to bank):** 15-30ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☑ Concrete
- ☑ Other Wood debris

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2-6ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 2-6ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Betula lenta, Tsuga canadensis, Populus grandidentata, Fagus grandifolia, Liriodendron tulipifera

**Width of riparian corridor (ft):** +150ft off ROW

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
**If yes, list:**
Fish, macroinvertebrates

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Concrete armored creek bottom across 3/4 of ROW

**NOTES:**
Stream S2-T5 was recently flooded. The stream is concrete armored starting at the northern edge of the ROW and extending 3/4th of the way to the southern edge of the ROW.

**STREAM ID:** S4-T5

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 10-30ft

**Width (ft) (bank to bank):** 10-30ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Betula lenta, Acer rubrum, Rhododendron maximum, Mitchella repens

Width of riparian corridor (ft): 2ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S4-T5 is an active flood channel of S2-T5 (Little Muncy Creek)

**STREAM ID:** S3-T5

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/22/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-4ft

**Width (ft) (bank to bank):** 1-4ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other detritus

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☑ **Other:** Erosion in tire ruts on ROW

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Betula lenta, Tsuga canadensis, Acer rubrum, Prunus serotina

**Width of riparian corridor (ft):** 150ft+ off ROW

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
**If yes, list:**
macroinvertebrates

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S3-T5 is an intermittent channel that flows through W2-T5. Wheel ruts were observed through the channel in the ROW.

**STREAM ID:** S5-T5

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/23/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2ft

**Width (ft) (bank to bank):** 1-2ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other muck

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 0.5ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 0.5ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Tsuga canadensis, Sphagnum, Glyceria striata, Osmunda cinnamomea, Carex sp.

**Width of riparian corridor (ft):** 150ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S5-T5 is a small channel located in the PFO portion of wetland W2-T5.

**STREAM ID:** S1-T5

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/22/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2'-4'

**Width (ft) (bank to bank):** 2'-5'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis, Pinus strobus, Betula nigra

Width of riparian corridor (ft): 150+ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☑ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S1-T5 is an intermittent channel that forms from W1-T5 and flows into W2-T4.

**STREAM ID:** S3-T3

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☐ UNNAMED ☑ NAMED: Buck Run

**Date:** 10/17/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, JH

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** northeast to southwest

**Width (ft) (water's edge to water's edge):** 6'-8'

**Width (ft) (bank to bank):** 6'-8'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other_____

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**_____
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:_____

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:_____

Highest Left Bank Height*:_____
Highest Left Bank Slope*:_____
Highest Right Bank Height*:_____
Highest Right Bank Slope*:_____
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-_____
☐ no
If yes, list:
Betula nigra, Tsuga canadensis
No riparian corridor on the existing pipeline ROW.

**Width of riparian corridor (ft):** 150ft+ off ROW

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):_____

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:_____
☐ man-altered – Explain:_____

**NOTES:**
S3-T3 is a perennial stream channel that flows through W2-T4.

**STREAM ID:** S1-T4

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/18/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, JH, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** West to East

**Width (ft) (water's edge to water's edge):** 15'

**Width (ft) (bank to bank):** 15-20
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis, Betula nigra, Pinus strobus,

Width of riparian corridor (ft): 150ft+

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S1-T4 is a perennial spring seep that enters S3-T3.

**STREAM ID:** S3-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2ft

**Width (ft) (bank to bank):** 2-3ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Betula lenta, Tsuga canadensis

Width of riparian corridor (ft): 150+ft off ROW

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☑ yes ☐ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☑ pools ☑ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S3-T2 is a braided headwater channel. Water was present in the pools.

**STREAM ID:** S2-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2-20ft

**Width (ft) (bank to bank):** 4-20ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☑ Sloughing ☐ Undercutting ☐ Impact from Cattle

☑ Other: Headcut where channel enters ROW

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Betula lenta, Tsuga canadensis, Acer rubrums, Hamamelis virginiana, Amelanchier arborea

**Width of riparian corridor (ft):** +150ft off ROW

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☑ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Previous impacted and restored across pipeline ROW

**NOTES:**
S2-T2 has erosion within the pipeline ROW with a 4' high headcut on the northern end of the ROW. The channel widens below ROW.

**STREAM ID:** S4-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 4-10ft

**Width (ft) (bank to bank):** 5-10ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Betula lenta, Tsuga canadensis, Quercus alba, Hamamelis virginiana

Width of riparian corridor (ft): 50-150ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S4-T2 is a perennial channel that flows into S2-T2.

**STREAM ID:** S9-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** East to west

**Width (ft) (water's edge to water's edge):** 1ft

**Width (ft) (bank to bank):** 1-2ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis, Hamamelis virginiana, Acer rubrum, Carpinus caroliniana, Quercus alba

Width of riparian corridor (ft): 150ft+

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Small ephemeral channel that exits wetland W2-T2 prior to entering stream S8-T2.

**STREAM ID:** S8-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** East to west

**Width (ft) (water's edge to water's edge):** 2-4ft

**Width (ft) (bank to bank):** 2-4ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Tsuga canadensis, Hamamelis virginiana, Acer rubrum, Carpinus caroliniana, Quercus alba

Width of riparian corridor (ft): 150ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S8-T2 is a small ephemeral channel that connects wetland W2-T2 to W1-T2 prior to entering S2-T2.

**STREAM ID:** S7-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East to west

**Width (ft) (water's edge to water's edge):** 2-3ft

**Width (ft) (bank to bank):** 2-3ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Betula lenta, Tsuga canadensis, Hamamelis virginiana, Acer rubrum

Width of riparian corridor (ft): +100ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S7-T2 originates in the PFO portion of wetland W1-T2 and enters S2-T2.

**STREAM ID:** S6-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** Northeast to southwest

**Width (ft) (water's edge to water's edge):** 1-2ft

**Width (ft) (bank to bank):** 1-2ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Betula lenta, Tsuga canadensis, Hamamelis virginiana, Acer rubrum

Width of riparian corridor (ft): +75ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S6-T2 is a small ephemeral channel that forms below W1-T2 and enters S2-T2.

**STREAM ID:** S5-T2

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** East to West

**Width (ft) (water's edge to water's edge):** 1-2ft

**Width (ft) (bank to bank):** 1-2ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other woody debris

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2-3ftt
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Betula lenta, Tsuga canadensis, Aronia melanocarpa

**Width of riparian corridor (ft):** 25-150ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S5-T2 is a small ephemeral channel that enters S2-T2.

**STREAM ID:** S2-T3

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, JH

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** northeast to southwest

**Width (ft) (water's edge to water's edge):** 1-2'

**Width (ft) (bank to bank):** 1-2'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other leaves

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other No water

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Acer Rubrum , Betula nigra, Quercus rubra

**Width of riparian corridor (ft):** 50ft +

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S2-T3 connects to W3-T1. No water was observed in the channel.

**STREAM ID:** S1-T3

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, JH

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** northeast to southwest

**Width (ft) (water's edge to water's edge):** 1'

**Width (ft) (bank to bank):** 1'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other leaves

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other No Water

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Acer rubrum, Quercus rubra, Betula nigra,

**Width of riparian corridor (ft):** 50ft +

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S1-T3 is an ephemeral channel that connects to W3-T1.

**STREAM ID:** S3-T1

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/15/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, JH

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East to West

**Width (ft) (water's edge to water's edge):** 3-10ft

**Width (ft) (bank to bank):** 3-10ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Quercus rubra, Acer rubrum, Tsuga canadensis, Picea rubens, Prunus serotina, Populus tremuloides

Width of riparian corridor (ft): 10-50ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Channel was potentially dug out in the past.

**NOTES:**
S3-T1 originates at a spring house and flows west into a pond. Potentially man-altered by digging out the channel in the past.

**STREAM ID:** S1-T1

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☐ UNNAMED ☑ NAMED: West Branch Little Muncy Creek

**Date:** 10/15/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, JH

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 4'-10'

**Width (ft) (bank to bank):** 4'-10'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other_____

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-3
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**_____
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☑ Other: Tire tracks

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**_____

**Highest Left Bank Height*:**_____
**Highest Left Bank Slope*:**_____
**Highest Right Bank Height*:**_____
**Highest Right Bank Slope*:**_____
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-_____
☐ no
**If yes, list:**
Salix interior, Populus tremuloides, Pinus strobus, Betula papyrifera, Rosa multiflora

**Width of riparian corridor (ft):** 0-150ft+

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
**If yes, list :**

**Aquatic Vegetation**
☑ yes
☐ no
**If yes, list:**
Salix interior

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
**If yes, list:**
Fish

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☑ abrupt change in plant community
- ☐ other (list):_____

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:_____
☐ man-altered – Explain:_____

**NOTES:**
S1-T1 is a perennial channel that flows through W3-T1. Wooden planks were present on the ROW in the stream where UTVs appear to cross.

**STREAM ID:** S2-T1

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/15/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, JH

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East to west

**Width (ft) (water's edge to water's edge):** 1-2ft

**Width (ft) (bank to bank):** 1-2ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Metal pipe

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Rosa multiflora, Elaeagnus umbellata

**Width of riparian corridor (ft):** 15'

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☑ other (list): half of a metal pipe

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
- ☐ natural
- ☐ manmade – Explain:
- ☑ man-altered – Explain: Flows through a pipe

**NOTES:**
The channel originates from a 6" pvc pipe that exits a shallow pond and flows onto a corrugated metal pipe that was cut in half before entering S1-T2.

**STREAM ID:** S1-T2

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/17/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** East to West

**Width (ft) (water's edge to water's edge):** NA

**Width (ft) (bank to bank):** 2-4ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☑ Other No water

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Prunus serotina, Hamamelis virginiana, Quercus alba

**Width of riparian corridor (ft):** 30ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:
☑ man-altered – Explain: Culvert ditch and swale

**NOTES:**
This ephemeral channel originates from a man-made swale that concentrates flow. Once the channel passes through a culvert it dissipates as sheet flow

**STREAM ID:** S6-T1

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/15/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, JH

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** East to West

**Width (ft) (water's edge to water's edge):** 3ft

**Width (ft) (bank to bank):** 4ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other No Water

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 4ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**_____
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:_____

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:_____

Highest Left Bank Height*:_____
Highest Left Bank Slope*:_____
Highest Right Bank Height*:_____
Highest Right Bank Slope*:_____
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-_____
☐ no
If yes, list:
Prunus serotina, Juglans nigra, Tsuga canadensis

**Width of riparian corridor (ft):** 150 ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☑ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):_____

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:_____
☑ man-altered – Explain: Culvert

**NOTES:**
The ephemeral channel forms from a culvert and a roadside ditch.

**STREAM ID:** S5-T1

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/16/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, JH

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East to West

**Width (ft) (water's edge to water's edge):** 4ft

**Width (ft) (bank to bank):** 4ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Impatiens capensis, Solidago rugosa

Width of riparian corridor (ft): 150ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
- ☐ natural
- ☐ manmade – Explain:
- ☑ man-altered – Explain: PVC pipe spring and a road culvert

**NOTES:**
S5-T1 begins at a PVC pipe in the hillside just east of Wilson Road and flows through a culvert.

**STREAM ID:** S4-T1

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Lycoming

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 10/16/18

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, JH

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** Northeast to southwest

**Width (ft) (water's edge to water's edge):** 2ft

**Width (ft) (bank to bank):** 2ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☑ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Quercus rubra, Tsuga canadensis, Betula lenta, Rubus sp.

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☑ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☑ yes ☐ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Culvert pipe under road

**NOTES:**
The ephemeral channel forms in the forest below a farm field and then travels down a roadside ditch.

# ATTACHMENT B

# WETLAND AND WATER RESOURCE SUMMARY TABLES

# WETLAND RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**BENTON LOOP PROJECT**
**WETLAND RESOURCE SUMMARY TABLE**

| Wetland ID | Dataform ID | Cowardin Code | Resource Size | | | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Chapter 105.17 Wetland Designation | Watershed Information | | | Wetland Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | Watershed Name | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | |
| W8-T1 | W8-T1-1A | PEM | 142 | 111 | 18,161 | Yes | RPWWD | 41.267751 | -76.460448 | EV | Little Fishing Creek | EV,MF | - | A PEM/PFO wetland complex. The PEM portion of the wetland is located on a pipeline ROW. The wetland extends beyond the ROW on either side where it transitions to a PFO wetland. This wetland complex abuts stream channels S1-T7. Buttressed roots and sphagnum moss where observed. |
| | W8-T1-1C | PFO | 101 | 253 | 35,602 | | | 41.267452 | -76.460592 | | | | | |
| W14-T6 | W14-T6-1A | PEM | 53 | 14 | 736 | No | ISOLATE | 41.266839 | -76.469696 | Other | Little Brier Run | EV, MF | - | Located in a depressional area along an exising pipeline right-of-way. |
| W13-T6 | W13-T6-1A | PEM | 150 | 101 | 14,516 | No | ISOLATE | 41.266714 | -76.470276 | Other | Little Brier Run | EV, MF | - | Located in a depressional area along an existing pipeline right-of-way. Several junk vehicles were observed in the wetland area. |
| W3-T6 | W3-T6-1C | PFO | 44 | 57 | 2,488 | No | ISOLATE | 41.267173 | -76.470575 | Other | Little Brier Run | EV, MF | - | A vernal pool wetland located in a sparsely vegetated forested area. Hydrophytic vegetation was determined through observed morphologic adaptations consisting of buttressed roots. |
| W2-T6 | W2-T6-1A | PEM | 30 | 31 | 806 | No | ISOLATE | 41.266397 | -76.473572 | Other | Little Brier Run | EV, MF | - | Located in a depressional area along an existing pipeline right-of-way. |
| W1-T6 | W1-T6-1A | PEM | 25 | 24 | 548 | No | ISOLATE | 41.266598 | -76.473842 | Other | Little Muncy Creek | CWF, MF | EV, MF | Located in a depressional area along an existing pipeline right-of-way. |
| W4-T6 | W4-T6-1A | PEM | 249 | 121 | 28,775 | No | NRPWW | 41.265335 | -76.479739 | EV | Little Muncy Creek | CWF, MF | EV, MF | Located in a swale feature on an existing pipeline right-of-way |
| W5-T6 | W5-T6-1A | PEM | 49 | 27 | 1,169 | No | ISOLATE | 41.26541 | -76.480834 | Other | Little Muncy Creek | CWF, MF | EV, MF | Located in a depressional area along an existing pipeline right-of-way. |
| W6-T6 | W6-T6-1A | PEM | 76 | 28 | 2,397 | No | ISOLATE | 41.265257 | -76.480573 | EV | Little Muncy Creek | EV, MF | EV, MF | Located in a depressional area along an existing pipeline right-of-way. Wheel ruts were observed throughout |
| W7-T6 | W7-T6-1A | PEM | 67 | 40 | 3,614 | No | RPWWD | 41.265473 | -76.484149 | EV | Little Muncy Creek | CWF, MF | EV, MF | Located adjacent to an existing pipeline right-of-way, the wetland begins in an area with several spring seeps which form a channel (S3-T6) within the wetland area. |
| W1-T10 | W1-T10-1C | PFO | 51 | 15 | 750 | No | RPWWD | 41.265457 | -76.484669 | EV | Little Muncy Creek | CWF, MF | EV, MF | A depressional PFO wetland in a forested area to the south of Little Muncy Creek. |
| W11-T6 | W11-T6-1C | PFO | 139 | 109 | 9,996 | No | ISOLATE | 41.265252 | -76.485272 | Other | Little Muncy Creek | CWF, MF | EV, MF | A depressional PFO wetland in a forested area north of the existing pipeline right-of-way. Buttressed roots were observed. |
| W10-T6 | W10-T6-1A | PEM | 45 | 20 | 858 | No | ISOLATE | 41.264912 | -76.485257 | Other | Little Muncy Creek | CWF, MF | EV, MF | A depressional PEM wetland located on an existing pipeline right-of-way. |
| W8-T6 | W8-T6-1A | PEM | 166 | 26 | 4,118 | No | ISOLATE | 41.26477 | -76.485116 | Other | Little Muncy Creek | CWF, MF | EV, MF | A PEM wetland located within an existing pipeline right-of-way. |
| W9-T6 | W9-T6-1A | PEM | 21 | 10 | 234 | No | ISOLATE | 41.264661 | -76.485165 | Other | Little Muncy Creek | CWF, MF | EV, MF | A depressional PEM wetland located adjacent to an existing pipeline ROW. Sphagnum moss was observed |
| W12-T6 | W12-T6-1A | PEM | 40 | 7 | 215 | No | NRPWW | 41.26504 | -76.484692 | EV | Little Muncy Creek | CWF, MF | EV, MF | A depressional PEM wetland abutting S5-T6 along the existing ROW. |
| W16-T6 | W16-T6-1A | PEM | 314 | 145 | 44,017 | Yes | RPWWD | 41.263289 | -76.497915 | EV | Little Muncy Creek | CWF, MF | EV, MF | A PEM/ PFO wetland complex. The PEM portion of the wetland is located in a depression within an existing pipeline ROW . The PFO portion is located to the north and south of the pipeline ROW. Little Muncy Creek (S2-T5) runs throughout the PEM portion of the wetland and abuts the southern PFO portion. This wetland is hydrologically connected to W15-T6 via S7-T6 and to W17-T6 via S9-T6. The PFO portions of the wetland also abut S8-T6 and S10-T6. Wheel ruts were observed within the wetland. Buttressed roots were observed. |
| | W16-T6-1C | PFO | 117 | 119 | 15,261 | | | 41.26317 | -76.497645 | | | | | |
| | W16-T6-2C | | 200 | 115 | 18,089 | | | 41.263749 | -76.496967 | | | | | |
| W17-T6 | W17-T6-1C | PFO | 16 | 52 | 1,135 | No | NRPWW | 41.262292 | -76.497398 | EV | Little Muncy Creek | CWF, MF | EV, MF | A depressional PFO wetland located adjacent to an existing pipeline ROW. Buttressed roots were observed. |
| W15-T6 | W15-T6-1A | PEM | 15 | 65 | 860 | Yes | RPWWD | 41.263289 | -76.497915 | EV | Little Muncy Creek | CWF, MF | EV, MF | A PEM wetland. S7-T6 flows throughout the wetland. This wetland is also hydrologically connected to W16-T6 via S7-T6. |
| W2-T5 | W2-T5-1A | PEM | 226 | 76 | 17,595 | Yes | RPWWD | 41.263383 | -76.499186 | EV | Little Muncy Creek | CWF, MF | EV, MF | A PEM/ PFO wetland complex. The PEM portion of the wetland is located in a depression within an existing pipeline ROW . The PFO portion is located adjacent to the pipeline ROW. Stream channel S3-T5 flows throughout and provides hydrology to the wetland complex. Channel S5-T5 also flows throughout the PFO portion of the complex. Buttressed roots and sphagnum moss where observed. |
| | W2-T5-1C | PFO | 137 | 173 | 29,552 | | | 41.263706 | -76.498359 | | | | | |
| W4-T5 | W4-T5-1A | PEM | 22 | 19 | 514 | Yes | RPWWD | 41.263054 | -76.499462 | EV | Little Muncy Creek | CWF, MF | EV, MF | W4-T5-1a is located in the PEM portion of a PEM/PFO wetland complex which abuts S3-T5. The PEM portion of the wetland complex is located in an existing a pipeline right-of-way. W4-T5-1c is located in the PFO portion of the wetland. The PFO portion is in a depressional area. |
| | W4-T5-1C | PFO | 127 | 92 | 14,426 | | | 41.262675 | -76.499731 | EV | | | | |
| W1-T4 | W1-T4-1C | PFO | 20 | 59 | 941 | No | RPWWN | 41.263312 | -76.505667 | EV | Buck Run | CWF, MF | EV, MF | PFO wetland located adjacent to an existing pipeline ROW in the floodway of Buck Run (S3-T3). Buttressed roots and sphagnum moss were observed. |
| W2-T4 | W2-T4-1A | PEM | 308 | 191 | 66,767 | Yes | RPWWD | 41.262686 | -76.505191 | EV | Buck Run | CWF, MF | EV, MF | PEM/PFO wetland complex. The PEM portion is located within an existing pipeline ROW. The wetland extends beyond the ROW on either side where it transititions to a PFO wetland. Buck Run (S3-T3) flows through the PEM portion of this wetland. Buttressed roots and sphagnum moss where observed. |
| | W2-T4-1C | PFO | 47 | 50 | 2,338 | | | 41.26299 | -76.505137 | | | | | |
| | W2-T4-2C | | 160 | 116 | 15,077 | | | 41.262207 | -76.504538 | | | | | |
| W1-T5 | W1-T5-1C | PFO | 122 | 14 | 2,089 | No | RPWWD | 41.262301 | -76.503952 | EV | Buck Run | CWF, MF | EV, MF | A PFO wetland located on terrace at the bottom of a hillslope and abuts S1-T5. Buttressed roots were observed on tree species. |
| W3-T3 | W3-T3-1C | PFO | 14 | 52 | 1,612 | No | RPWWD | 41.262127 | -76.505443 | EV | Buck Run | CWF, MF | EV, MF | A PFO wetland located adjacent to an existing pipeline ROW. Buck Run (S3-T3) flows throughout the wetland. Buttressed roots and sphagnum moss where observed |
| W2-T3 | W2-T3-1A | PEM | 142 | 30 | 4,796 | No | ISOLATE | 41.262656 | -76.506457 | Other | Buck Run | CWF, MF | EV, MF | A PEM wetland located within an existing pipeline ROW. Wheel ruts were present throughout the wetland area. |

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**BENTON LOOP PROJECT**
**WETLAND RESOURCE SUMMARY TABLE**

| Wetland ID | Dataform ID | Cowardin Code | Resource Size | | | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Chapter 105.17 Wetland Designation | Watershed Information | | | Wetland Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | Watershed Name | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | |
| W2-T2 | W2-T2-1A | PEM | 112 | 95 | 9,026 | No | NRPWW | 41.261368 | -76.512821 | EV | Little Muncy Creek | CWF, MF | EV, MF | A PEM wetland located adjacent to a pipeline ROW and an access road. This wetland abuts S8-T2 and S9-T2. |
| W1-T2 | W1-T2-1A | PEM | 503 | 90 | 64,462 | No | RPWWD | 41.26176 | -76.51359 | EV | Little Muncy Creek | CWF, MF | EV, MF | A PEM/PFO wetland complex. The PEM portion of the wetland is located on a pipeline ROW. The wetland extends beyond the ROW on either side where it transitions to a PFO wetland. This wetland complex abuts stream channels S2-T2 and S8-T2. It is hydrologically connected to wetland W2-T2 via channel S8-T2. Wheel ruts were observed within the PEM portion of the wetland. |
| | W1-T2-1C | PFO | 78 | 88 | 7,844 | | | 41.262308 | -76.513672 | | | | | |
| | W1-T2-2C | | 17 | 86 | 1,435 | | | 41.262309 | -76.51365 | | | | | |
| W6-T1 | W6-T1-1C | PFO | 15 | 36 | 465 | Yes | RPWWD | 41.261247 | -76.514013 | EV | Little Muncy Creek | CWF, MF | EV, MF | A PFO wetland located adjacent to a pipeline ROW and is upstream from a pond. This wetland abuts S2-T2. |
| W3-T1 | W3-T1-1A | PEM | 50 | 309 | 11,795 | Yes | RPWWD | 41.261005 | -76.525697 | EV | West Branch of Little Muncy Creek | CWF, MF | EV, MF | A PEM/PSS/PFO wetland complex located in and adjacent to an existing pipeline ROW. The PEM and PSS portion of the wetland are located within the ROW while the PFO is located adjacent to the ROW. S1-T1 flows throughout the wetland complex. This complex also abuts S1-T3 and S2-T3. Water seeping from a nearby pond (W1-T1) also provides hydrology to the complex. |
| | W3-T1-2A | | 20 | 32 | 797 | | | 41.260833 | -76.525757 | | | | | |
| | W3-T1-1B | PSS | 54 | 64 | 4,647 | | | 41.260951 | -76.525652 | | | | | |
| | W3-T1-1C | PFO | 40 | 198 | 7,941 | | | 41.261356 | -76.525532 | | | | | |
| W1-T1 | W1-T1-1A | PEM | 22 | 42 | 830 | No | RPWWD | 41.260667 | -76.5256 | EV | West Branch of Little Muncy Creek | CWF, MF | EV, MF | A PEM/POW wetland complex located on the edge of a field. The wetland recieves hydrology from stream channel S3-T1 and outlets to S2-T1 through a culvert. A man made dam is present. |
| | W1-T1-1D | POW | 59 | 46 | 2,522 | | | 41.260643 | -76.525654 | | | | | |
| W2-T1 | W2-T1-1A | PEM | 45 | 27 | 837 | No | RPWWD | 41.260642 | -76.525962 | EV | West Branch of Little Muncy Creek | CWF, MF | EV, MF | A PEM wetland located adjacent to an existing pipeline ROW. This wetland abuts S1-T1 and lies adjacent to W1-T1. |
| W5-T1 | W5-T1-1A | PEM | 35 | 15 | 587 | Yes | RPWWD | 41.25857 | -76.512687 | Other | Little Muncy Creek | CWF, MF | EV, MF | A PEM wetland located along the edge of an existing access road. This wetland abuts S5-T1. |
| W4-T1 | W4-T1-1A | PEM | 33 | 28 | 1,425 | Yes | DELINEATE | 41.255437 | -76.510616 | Other | Little Muncy Creek | CWF, MF | EV, MF | A PEM wetland located along an access road. Hydrology is received from a culvert and possibly from water that is seeping out from the bottom of the dam present at W7-T1. |
| W7-T1 | W7-T1-1D | POW | 401 | 64 | 19,902 | Yes | RPWWD | 41.255679 | -76.510821 | Other | Little Muncy Creek | CWF, MF | EV, MF | A stream fed POW wetland that is a pond located adjacent to an existing access road. Vegetation was sparse within the wetland due to water depths that were 3 feet or greater. |

| | |
|---|---|
| **Total PEM Wetlands** | **300,455** |
| **Total PSS Wetlands** | **4,647** |
| **Total PFO Wetlands** | **167,041** |
| **Total POW Wetlands** | **22,424** |
| **TOTAL** | **494,567** |

# WATERCOURSE RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**BENTON LOOP PROJECT**
**WATERCOURSE RESOURCE SUMMARY TABLE**

| Watercourse ID | Stream Name | Type | Resource Size | | | Floodway - FEMA & 50ft (ac) | FEMA Floodplain (ac) | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Watershed Name | PA Code Chapter 93 Water Quality | | PFBC Classification | | | Watercourse Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | | | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | Stocked Trout | Naturally Reproducing Trout | Class A Wild Trout | |
| S1-T6 | UNT to Little Fishing Creek | Perennial | 58 | 6 | 417 | 0.22 | - | Yes | RPW | 41.266993 | -76.461499 | Little Fishing Creek | CWF, MF | EV, MF | No | Yes | Yes | S1-T6 is a headwater stream that starts at a spring. |
| S1-T7 | Little Fishing Creek | Perennial | 633 | 16 | 10,539 | 0.69 | - | Yes | RPW | 41.267447 | -76.460318 | Little Fishing Creek | CWF, MF | EV, MF | No | Yes | Yes | Erosion observed within the existing pipeline ROW only. ATV tracks were also observed within the existing pipeline ROW. The channel is approximately 15-25' outside of the pipeline ROW; within the ROW the channel narrows to 3-5' wide. |
| S2-T6 | UNT to Little Muncy Creek | Ephemeral | 657 | 4 | 5,287 | 1.58 | - | Yes | NRPW | 41.265478 | -76.480231 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S2-T6 is a headwater stream that starts at a spring. |
| S3-T6 | UNT to Little Muncy Creek | Perennial | 206 | 4 | 493 | | - | No | RPW | 41.265491 | -76.484296 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S3-T6 starts at a spring and flows into S4-T6. A wetland fringe is located on most of the stream channel (W7-T6). |
| S5-T6 | UNT to Little Muncy Creek | Ephemeral | 477 | 3 | 1,432 | 2.27 | - | No | NRPW | 41.265437 | -76.484781 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S5-T6 starts at a culvert and flows into S4-T6. A small wetland fringe (W12-T6) is located on the eastern side of the stream channel. |
| S4-T6 | Little Muncy Creek | Perennial | 366 | 20 | 6,670 | | - | Yes | RPW | 41.265356 | -76.485978 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S4-T6 is the headwater of Little Muncy Creek and is a perennial stream channel. |
| S6-T6 | UNT to Little Muncy Creek | Perennial | 497 | 8 | 4,517 | 1.25 | - | Yes | RPW | 41.264743 | -76.486632 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S6-T6 is the start of a perennial stream channel that flows into Little Muncy Creek outside of the investigation area. |
| S8-T6 | UNT to Little Muncy Creek | Ephemeral | 53 | 2 | 127 | 0.30 | - | No | NRPW | 41.263757 | -76.496623 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S8-T6 starts at a culvert and drains to W16-T6. No water was observed in the channel. |
| S10-T6 | UNT to Little Muncy Creek | Ephemeral | 67 | 2 | 167 | 0.32 | - | No | NRPW | 41.263019 | -76.497115 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S10-T6 is an ephemeral channel that begins at a culvert. |
| S9-T6 | UNT to Little Muncy Creek | Ephemeral | 70 | 2 | 174 | 0.26 | - | No | NRPW | 41.262895 | -76.497616 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S9-T6 connects W17-T6 and W16-T6. No water was observed in the channel. |
| S6-T5 | UNT to Little Muncy Creek | Perennial | 41 | 7 | 256 | | - | No | RPW | 41.263418 | -76.498124 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S6-T5 originates from a spring and flows into S2-T5. |
| S7-T6 | UNT to Little Muncy Creek | Perennial | 284 | 4 | 856 | | - | Yes | RPW | 41.262789 | -76.498485 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S7-T6 starts at several springs and travels in a swale feature through W16-T6 and W15-T6. |
| S2-T5 | Little Muncy Creek | Perennial | 843 | 20 | 17,150 | 4.18 | 4.09 | Yes | RPW | 41.263418 | -76.498124 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | Stream S2-T5 was recently flooded. The stream has concreate bottom and banks across 3/4 of the ROW. |
| S4-T5 | UNT to Little Muncy Creek | Ephemeral | 213 | 20 | 2,789 | | - | Yes | NRPW | 41.262864 | -76.499036 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S4-T5 is an active flood channel of S2-T5 (Little Muncy Creek). |
| S3-T5 | UNT to Little Muncy Creek | Intermittent | 709 | 3 | 2,157 | | - | No | RPW | 41.262962 | -76.499187 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S3-T5 is an intermittent channel that flows through W2-T5. |
| S5-T5 | UNT to Little Muncy Creek | Intermittent | 106 | 1 | 106 | | - | No | RPW | 41.26393 | -76.497991 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S5-T5 is a small channel located in the PFO portion of wetland W2-T5. |
| S1-T5 | UNT to Buck Run | Intermittent | 173 | 4 | 503 | 0.26 | - | Yes | RPW | 41.262107 | -76.504629 | Buck Run | CWF, MF | EV, MF | No | Yes | No | S1-T5 is an intermittent channel that forms from W1-T5 and flows into W2-T4. |
| S3-T3 | Buck Run | Perennial | 530 | 7 | 6,772 | 1.31 | - | Yes | RPW | 41.262657 | -76.505646 | Buck Run | CWF, MF | EV, MF | No | Yes | No | S3-T3 is a perennial stream channel that flows through W2-T4. |
| S1-T4 | UNT to Buck Run | Perennial | 45 | 17 | 687 | | - | No | RPW | 41.263186 | -76.505887 | Buck Run | CWF, MF | EV, MF | No | Yes | No | S1-T4 is a perennial spring seep that enters S3-T3. |
| S3-T2 | UNT to Little Muncy Creek | Ephemeral | 186 | 2 | 273 | | - | Yes | NRPW | 41.262498 | -76.513902 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S3-T2 is a braided headwater channel. Water was present in the pools. |
| S2-T2 | UNT to Little Muncy Creek | Perennial | 522 | 10 | 5,854 | | - | Yes | RPW | 41.261706 | -76.513987 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S2-T2 has erosion within the pipeline ROW with a 4' high headcut on the northern end of the ROW. The channel widens below ROW. |
| S4-T2 | UNT to Little Muncy Creek | Perennial | 207 | 8 | 1,633 | | - | Yes | RPW | 41.262359 | -76.513792 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S4-T2 is a perennial channel that flows into S2-T2. |
| S9-T2 | UNT to Little Muncy Creek | Ephemeral | 86 | 1 | 86 | | - | No | NRPW | 41.261357 | -76.513093 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | Small ephemeral channel that exits wetland W2-T2 prior to entering stream S8-T2. |
| S8-T2 | UNT to Little Muncy Creek | Ephemeral | 272 | 3 | 812 | 1.98 | - | No | NRPW | 41.26134 | -76.513342 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S8-T2 is a small ephemeral channel that connects wetland W2-T2 to W1-T2 prior to entering S2-T2. |
| S7-T2 | UNT to Little Muncy Creek | Intermittent | 36 | 3 | 111 | | - | No | RPW | 41.261456 | -76.513771 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S7-T2 originates in the PFO portion of wetland W1-T2 and enters S2-T2. |
| S6-T2 | UNT to Little Muncy Creek | Ephemeral | 27 | 1 | 28 | | - | No | NRPW | 41.261511 | -76.513822 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S6-T2 is a small ephemeral channel that forms below W1-T2 and enters S2-T2. |
| S5-T2 | UNT to Little Muncy Creek | Ephemeral | 20 | 1 | 30 | | - | No | NRPW | 41.262174 | -76.513989 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S5-T2 is a small ephemeral channel that enters S2-T2. |
| S2-T3 | UNT to West Branch Little Muncy Creek | Ephemeral | 451 | 1 | 669 | | - | No | NRPW | 41.261698 | -76.524318 | West Branch to Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S2-T3 connects to W3-T1. No water was observed in the channel. |
| S1-T3 | UNT to West Branch Little Muncy Creek | Ephemeral | 61 | 1 | 61 | | - | No | NRPW | 41.261459 | -76.524949 | West Branch to Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S1-T3 is an ephemeral channel that connects to W3-T1. |
| S3-T1 | UNT to West Branch Little Muncy Creek | Perennial | 202 | 7 | 1,426 | 2.89 | - | No | RPW | 41.260718 | -76.525233 | West Branch to Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S3-T1 originates at a spring house and flows west into a pond. Potentially man-altered by digging out the channel in the past. |
| S1-T1 | UNT to West Branch Little Muncy Creek | Perennial | 562 | 6 | 3,599 | | - | Yes | RPW | 41.261169 | -76.525522 | West Branch to Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S1-T1 is a perennial channel that flows through W3-T1. Wooden planks were present in the stream where UTVs appear to cross. |
| S2-T1 | UNT to West Branch Little Muncy Creek | Perennial | 11 | 1 | 16 | | - | No | NRPW | 41.260743 | -76.525915 | West Branch to Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | The channel originates from a 6" pvc pipe that exits a shallow pond and flows onto a corrugated metal pipe that was cut in half before entering S1-T2. |
| S1-T2 | UNT to Little Muncy Creek | Ephemeral | 264 | 4 | 1,057 | | - | No | NRPW | 41.260035 | -76.512855 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S1-T2 is an ephemeral channel that originates from a man-made swale that concentrates flow. |

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**BENTON LOOP PROJECT**
**WATERCOURSE RESOURCE SUMMARY TABLE**

| Watercourse ID | Stream Name | Type | Resource Size | | | Floodway - FEMA & 50ft (ac) | FEMA Floodplain (ac) | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Watershed Name | PA Code Chapter 93 Water Quality | | PFBC Classification | | | Watercourse Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | | | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | Stocked Trout | Naturally Reproducing Trout | Class A Wild Trout | |
| S6-T1 | UNT to Little Muncy Creek | Ephemeral | 83 | 4 | 330 | 0.85 | - | Yes | NRPW | 41.259399 | -76.513011 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S6-T1 is an ephemeral channel that forms from a culvert and a roadside ditch. |
| S5-T1 | UNT to Little Muncy Creek | Perennial | 93 | 4 | 370 | 0.31 | - | Yes | RPW | 41.258587 | -76.512533 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | S5-T1 begins at a PVC pipe in the hillside just east of Wilson Road and flows through a culvert. |
| S4-T1 | UNT to Little Muncy Creek | Ephemeral | 369 | 2 | 738 | 0.78 | - | Yes | NRPW | 41.257639 | -76.511765 | Little Muncy Creek | CWF, MF | EV, MF | No | Yes | No | The ephemeral channel forms in the forest below a farm field and then travels down a roadside ditch and through a culvert. |
| | | | | | **Total Ephemeral Channels** | **14,060** | | | | | | | | | | | | |
| | | | | | **Total Intermittent Channels** | **2,877** | | | | | | | | | | | | |
| | | | | | **Total Perennial Channels** | **61,255** | | | | | | | | | | | | |
| | | | | | **TOTAL** | **78,192** | | | | | | | | | | | | |

ATTACHMENT C

PENNSYLVANIA LEVEL 2 RAPID ASSESSMENT REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

ATTACHMENT C

BENTON LOOP LEVEL 2 RAPID ASSESSMENT REPORT

JORDAN TOWNSHIP, LYCOMING COUNTY, PENNSYLVANIA

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LEIDY SOUTH PROJECT

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BENTON LOOP LEVEL 2 RAPID ASSESSMENT REPORT

JORDAN TOWNSHIP, LYCOMING COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Williams) to conduct a Functional Assessment of wetland and water resources associated with the Leidy South Project – Benton Loop (Project) located in Jordan Township, Lycoming County, Pennsylvania, on the Sonestown, Lairdsville, Benton, and Elk Grove, Pennsylvania, USGS 7.5 Minute Quadrangle. The purpose of the Functional Assessment was to evaluate the condition of onsite aquatic resources that will be impacted as a result of the Project in order to meet the requirements as outlined in 25 Pa. Code Chapter 105 regulations. This report provides information on the methodology, data collected, field findings, and conclusions pertaining to the condition of wetland and water resources to be impacted. The Functional Assessment was conducted by WHM from October 2018 through August 2019.

# 2.0 METHODOLOGY

The Functional Assessment was conducted in accordance with the procedures and technical guidelines outlined in the Pennsylvania Department of Environmental Protection's (PADEP) Level 2 Rapid Assessment Protocols. A desktop analysis was conducted to determine assessment areas (AA) and zones of influence (ZOI). Field data was collected, and the desktop and field data were used in conjunction to arrive at the overall condition scores. The observations made represent the assessor's best professional judgement exercised with the guidance of the Rapid Assessment Protocols.

## 2.1 WETLAND CONDITION ASSESSMENT

The Functional Assessment of the onsite wetlands was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol* (Wetland Protocol). Aerial and satellite imagery combined with ArcGIS were utilized to determine the AA. The AA was determined based on the following criteria as outlined in the Wetland Protocol:

1. The AA is comprised of the entire wetland if the wetland is less than or equal to 1.0 acre in size.
2. If the wetland is larger than 1.0 acre in size and the impact area is less than 1.0 acre, the AA will be established around the impact area until the AA is 1.0 acre in size. In general, the AA will be a representative sampling of the entire wetland while still encompassing the impact area.
3. The AA is comprised of the entire wetland impact area if the proposed impact is greater than 1.0 acre in size.

Once the AA has been established, the wetland Zone of Influence (ZOI) is determined and is comprised of the land extending 300 ft. beyond the perimeter of the AA. The AA or ZOI is then assessed using the six condition indices outlined in Table 1. As noted in the table, two sub-indices are utilized to evaluate Vegetation Condition and Water Quality Stressors.

| Index | Assessment Method | Zone Assessed |
|---|---|---|
| Wetland ZOI Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Roadbed Presence Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Vegetation Condition | | |
| *Invasive Species Presence Sub-Index* | Field Observation | AA |
| *Vegetation Stressor Presence Sub-Index* | Field Observation | AA |
| Hydrologic Modification Stressor | Field Observation | AA |
| Sediment Stressor | Field Observation | AA |
| Water Quality Stressor | | |
| *Eutrophication Stressor Presence Sub-Index* | Field Observation | AA |
| *Contaminant/Toxicity Stressor Presence Sub-Index* | Field Observation | AA |

Table 1. Wetland Condition Indices.

According to the Wetland Protocol, the Wetland Condition Index Form (WCIF) and three supplemental worksheets (Roadbed Worksheet, Invasive Presence Worksheet, and Stressor Worksheet) are used to calculate the Overall Condition Index for the wetland being assessed. Using the WCIF, each of the six indices discussed in Table 1 are scored on a scale of 1 to 20, with 20 being the optimal condition. The Overall Condition Index is calculated by summing the six main indices and then dividing by 6. In general, the closer a score is to one, the better the condition the wetland is.

## 2.2 RIVERINE CONDITION ASSESSMENT

The Functional Assessment of onsite perennial and intermittent streams was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol* (Riverine Protocol). Aerial and satellite imagery and ArcGIS were utilized to determine the upper and lower boundaries of the AA. The boundaries of the AA were determined based on all or some of the following criteria as outlined in the Riverine Protocol:

1. The upstream influence of backwater projected as part of the hydrologic and hydraulic (H&H) analysis and application of the same distance downstream; or
2. 20 times the channel width at bankfull stage upstream and downstream; or
3. 100 feet upstream and downstream of the proposed location, whichever is greater.

Once the upper and lower boundaries of the AA were established, the Riparian Vegetation and Riparian ZOI were established. The Riparian Vegetation Areas was

established using the following the criteria as outlined in the Riverine Protocol. The following criteria are listed in order of the method that is preferred by PADEP:

1. Hydrologic modeling analysis to determine the 100-year storm event; or
2. 100-year Federal Emergency Management Agency (FEMA) floodplain mapping; or
3. In FEMA unmapped areas, the flood prone area width is estimated by determining the elevation that corresponds to twice the maximum depth of the bankfull channel as taken from the established bankfull stage; or
4. In FEMA unmapped areas where hydrologic modeling analysis and stream cross-section data is not available, estimate the flood prone area width by extending 100 feet from the stream bank towards the valley margins. Best professional judgement is to be utilized by the assessor if one or more of the valley margins are less than 100 feet from the bank and adjust boundaries.

In areas where a mapped FEMA floodplain was available, ArcGIS was used to determine the boundary. In all instances, best professional judgement was used to define the Riparian Vegetation areas in accordance with the criteria provided above.

Once the Riparian Vegetation Areas were established, Riparian ZOI boundaries were determined by extending 100 feet landward from the Riparian Vegetation Area boundaries on each side of the stream and along the entire length of the Riparian Vegetation Area. If assessing the uppermost headwaters of a watercourse, the area 100 feet above the watercourse may be included in the Riparian Zone boundary.

In accordance with the Riverine Protocol, the Riparian ZOI is not evaluated as part of the condition assessment for perennial streams with a drainage area greater than 100 square miles or less than 2,000 square miles. Likewise, the Instream Habitat condition will not be evaluated for intermittent streams. Neither of the aforementioned indices will be included in the assessment when evaluating those stream types unless deemed necessary by PADEP.

Once the AA and ZOI have been determined, the riverine condition is assessed using the five condition indices outlined in Table 2. As noted in the table, not all indices are used to determine the overall condition of the channel being evaluated, unless deemed necessary by PADEP.

| Index | Watercourse Classification | | | Assessment Method | Zone Assessed |
|---|---|---|---|---|---|
| | **Intermittent** | **Perennial** (Drainage area ≤ 100 sq. miles) | **Perennial** (Drainage area >100 sq. miles but ≤ 2,000 sq. miles ) | | |
| Channel/Floodplain Condition | Yes | Yes | Yes | Field Observations | AA |
| Riparian Vegetation Condition | Yes | Yes | Yes | Desktop Analysis of Aerial Imagery<br>Field Observations | AA<br>Riparian Vegetation Area |
| Riparian Zone of Influence Condition | Yes | Yes | No | Desktop Analysis of Aerial Imagery<br>Field Observations | Riparian ZOI |
| Instream Habitat Condition | No | Yes | Yes | Field Observations | AA |
| Channel Alteration Condition | Yes | Yes | Yes | Field Observations | AA |

Table 2. Indices to be determined based on watercourse classification.

According to the Riverine Protocol, the Riverine Assessment Form 1 (RAF1) is to be used to calculate the Riverine Condition Index for the stream being assessed. Using RAF1, each of the six indices discussed in Table 2 are scored on a scale of 1 to 20, with 20 being the optimal condition. When calculating the Riparian Vegetation Condition Index and the Riparian ZOI Condition Index, the left and right sides are scored, summed together, and then divided by 2 for the overall score for each.

The indices evaluated in Table 2 are weighted equally when calculating the final score for the Riverine Condition Index (RCI). Therefore, to calculate RCI, each index score is added together and then divided by the number of indices evaluated. For example, when calculating RCI for an intermittent stream, the scores for the four indices assessed would be added together and divided by 4. In general, the closer the score is to 1, the better the condition of the stream being assessed.

## 3.0 RESULTS

Sixteen (16) wetlands and eight (8) streams were evaluated during the assessment. Attachment A- Assessment Forms includes data collected for the wetlands and watercourses at the site. Attachment B - Figures includes mapping of the resources evaluated during the assessment and their respective AA and ZOI boundaries. The following provides a descriptive summary of the data collected during the Functional Assessment.

### 3.1 WETLANDS

Overall sixteen (16) wetlands were assessed for the purposes of the Functional Assessment. Due to proximity, wetlands were combined as applicable, which resulted in a total of nine (9) assessment areas. In general, the wetland ZOIs were comprised of forests, the existing pipeline right-of-way, agricultural fields, and other stream and wetland features.

| Leidy South - Benton Loop Project - Wetland Condition Assessment Summary Table | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Assessment Area Number | Wetland ID | Assessment Area (Acres) | ZOI Condition Index | Roadbed Presence Index | Vegetation Condition Index | Hydrologic Modification Index | Sediment Stressor Index | Water Quality Stressor Index | Overall Condition Index |
| 1 | W1-T1, W2-T2, & W3-T1 | 0.88 | 0.44 | 0.70 | 0.73 | 0.70 | 0.95 | 1.00 | 0.75 |
| 2 | W8-T6 & W9-T6 | 0.10 | 0.72 | 0.85 | 0.80 | 0.95 | 1.00 | 1.00 | 0.89 |
| 3 | W1-T2 | 1.00 | 0.63 | 0.85 | 0.70 | 0.70 | 0.85 | 1.00 | 0.79 |
| 4 | W2-T4 | 1.00 | 0.73 | 0.95 | 0.60 | 0.85 | 0.95 | 0.88 | 0.83 |
| 5 | W6-T6 | 0.06 | 0.73 | 1.00 | 0.85 | 0.85 | 0.95 | 1.00 | 0.90 |
| 6 | W4-T6 | 0.67 | 0.50 | 1.00 | 0.83 | 0.85 | 0.95 | 1.00 | 0.85 |
| 7 | W1-T6 & W2-T6 | 0.03 | 0.75 | 0.85 | 0.53 | 0.80 | 0.95 | 1.00 | 0.81 |
| 8 | W13-T6 & W14-T6 | 0.35 | 0.35 | 0.55 | 0.53 | 0.70 | 1.00 | 0.85 | 0.66 |
| 9 | W2-T5, W4-T5, & W16-T6 | 1.00 | 0.85 | 0.80 | 0.68 | 0.60 | 0.85 | 1.00 | 0.80 |

Table 3 – Wetland Condition Assessment Summary Table

Functional assessments resulted in Overall Condition Index scores ranged from 0.66 to 0.90 for the nine (9) wetland functional assessments. See Attachment A (Assessment Forms) and Attachment B (Figures) for more detail.

## 3.2 STREAMS

Overall eight (8) streams were assessed for the purposes of the Functional Assessment. Due to proximity, streamss were combined as applicable, which resulted in a total of seven (7) assessment areas. In general, the Riparian Vegetation and Riparian ZOIs were comprised of forests, the existing pipeline right-of-way, agricultural fields, and other stream and wetland features.

| Leidy South - Benton Loop Project - Riparian Condition Assessment Summary Table | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Assessment Area Number | Stream ID | Assessment Area Length (Feet) | Channel / Floodplain Condition Index | Riparian Vegetation Condition Index | Riparian ZOI Condition Index | Instream Habitat Condition Index | Channel Aleration Condition Index | Overall Condition Index |
| 10 | S1-T1 | 280 | 0.60 | 0.73 | 0.43 | 0.85 | 0.70 | 0.66 |
| 11 | S2-T2 | 264 | 0.60 | 0.79 | 0.69 | 0.85 | 0.85 | 0.76 |
| 12 | S3-T3 | 259 | 0.80 | 0.91 | 0.74 | 0.80 | 0.90 | 0.83 |
| 13 | S3-T5 & S2-T5 | 548 | 0.50 | 0.80 | 0.82 | 0.55 | 0.45 | 0.62 |
| 14 | S6-T6 | 254 | 0.60 | 0.65 | 0.66 | 0.55 | 0.70 | 0.63 |
| 15 | S5-T6 | 309 | 0.15 | 0.55 | 0.71 | N/A | 0.25 | 0.41 |
| 16 | S2-T6 | 280 | 0.45 | 0.79 | 0.58 | N/A | 0.50 | 0.58 |

Table 4 – Riparian Condition Assessment Summary Table

Functional assessment scores for the seven (7) assessment areas ranged from 0.41 to 0.83. See Attachment A (Assessment Forms) and Attachment B (Figures) for more detail.

## 4.0 CONCLUSIONS

Sixteen (16) wetlands and eight (8) streams were evaluated during the Functional Assessment. Because some of the wetlands and streams were located within the same area and possessed similar characteristics and habitat, they were grouped together as one during the evaluation. This resulted in nine (9) wetland and seven (7) stream functional assessments being completed. The Overall Condition Index for wetlands ranged from 0.66 to 0.90, indicating that wetlands for the project were of marginal to high quality. The Riverine Condition Index for the streams ranged from 0.41 to 0.83, indicating the streams were of poor to high quality.

## 5.0 REFERENCES


1. Pennsylvania Code. 2017. http://www.pacode.com/secure/data/025/025toc.html.

2. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-003.

3. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-002.

4. United States Geological Survey (USGS). Topographic Quadrangle 7.5 minute Series Quadrangles, Sonestown, Lairdsville, Benton, and Elk Grove, PA.

# ATTACHMENT A

# ASSESSMENT FORMS

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/25/2019 | 0.13 | 1 | 0.88 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Carissa Butler, Jim Haney | 41.2610 | -76.5256 | Assessment Area #1 consists of wetlands W1-T1, W2-T1, & W3-T1. |

**General Comments: PEM/PSS/PFO/POW wetland complex sprawling across an existing pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 17% | 5% | 12% | 9% | 52% | 5% | **Total Score:** |
| | Score: | 20 | 18 | 12 | 7 | 3 | 1 | **CI** |
| | Total Sub-score: | 3.40 | 0.90 | 1.44 | 0.63 | 1.56 | 0.05 | **7.98** / **0.40** |

**Comments: Primary land uses included wetlands, streams, hay fields, existing maintained right-of-way, and roads and structures.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 14 | * (0.67) | 9 |
| **b. Roadbed 100-300:** | 14 | * (0.33) | 5 |
| | | **Total Score:** | **14** / **0.70** |

**Comments: Mordan Hollow runs adjacent to Assessment Area #1.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| a. Invasive Species Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments: Eleagnus umbellata and Rosa multiflora were present within the AA**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| b. Vegetation Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments: ROW maintenance takes place periodically within the AA.**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 15 | **Total Score** | |
| **b. Vegetation Sub-Score:** | 14 | **29** | **0.73** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Hydrologic Modification Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments: Stormwater runoff from Mordan Hollow Road and ATV tracks were present**

| | | |
|---|---|---|
| **Score:** | **14** | **0.70** |

**5. Sediment Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Sediment Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **19** | **0.95** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| a. Eutro-phication Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| b. Contaminant / Toxicity Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | |
| **b. Contaminant Score** | 20 | **40** | **1.00** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.75** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 1 | 41.2612 | -76.5254 | Mordan Hollow Rd runs adjacent to the AA. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 4 | | | 100-300 ft. | 4 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | | | x |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | x |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | x | 1 | |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)**** | | | x |
| Stream alteration (channelization or incision) | | | x |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | | | x |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | x |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| elum | 2 | | | | | | | | |
| romu | 1 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site 3 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/25/2019 | 0.10 | 2 | 0.10 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.264600° | -76.485473° | Assessment Area 2 consists of wetlands W8-T6 & W9-T6. |

**General Comments: Two small, PEM wetlands located on an existing, maintained pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 54% | 15% | 1% | 24% | 6% | | **Total Score:** |
| | Score: | 20 | 18 | 14 | 3 | 1 | | **CI** |
| | Total Sub-score: | 10.80 | 2.70 | 0.14 | 0.72 | 0.06 | 0.00 | **14.42** / **0.72** |

**Comments: Primary land uses included wetlands, streams, hay fields, forests, existing maintained right-of-way, and roads and structures.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments: N Woods Rd passes through this area.**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 |
| **b. Roadbed 100-300:** | 17 | * (0.33) | 6 |
| | | **Total Score:** | **17** / **0.85** |

**Comments: Both N Woods Rd nd Boudman Rd pass through this area.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** | **CI = Total Score/40** |
| **b. Vegetation Sub-Score:** | 12 | **32** | **0.80** |

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **19** | **0.95** |

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **20** | **1.00** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **1.00** |
| **b. Contaminant Score** | 20 | **40** | |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.89** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 2 | 41.264600° | -76.485473° | N Woods Rd and Boudman Rd are located in the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | 2 | 1 | 2 | 100-300 ft. | 2 | 1 | 2 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 2 | | | 100-300 ft. | 2 | | |

**Road Comments: Two gravel roads (N Woods Rd and Boudman Rd) are located in the Wetland ZOI.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | x |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/26/2019 | 0.60 | 3 | 1.0 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.2619 | -76.5126 | Assessment Area 3 consists of wetland W1-T2. |

**General Comments: Large PEM, PFO wetland complex located on and adjacent to an existing pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 43% | 2% | 9% | 3% | 41% | 2% | **Total Score:** / **CI** |
| | Score: | 20 | 17 | 15 | 8 | 5 | 2 | |
| | Total Sub-score: | 8.60 | 0.34 | 1.35 | 0.24 | 2.05 | 0.04 | **12.62** / **0.63** |

**Comments: Primary land uses included wetlands, streams, existing maintained pipeline right-of-way, and farm fields.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 |
| **b. Roadbed 100-300:** | 17 | * (0.33) | 6 |
| | | **Total Score:** | **17** / **0.85** |

**Comments: One existing dirt road is within the wetland ZOI buffer.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments: Poa trivialis and Rosa multiflora comprised less than 10% of the AA.**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. | CI = Total Score/40 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments: ROW maintenance periodically occurs within the AA.**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 14 | **Total Score** | |
| **b. Vegetation Sub-Score:** | 14 | **28** | **0.70** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | 0.70 |

**Comments: ATV tracks and a headcut were located within the AA.**

| | |
|---|---|
| **Score:** | **14** |

**5. Sediment Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | 0.85 |

**Comments: Eroding streambanks.**

| | |
|---|---|
| **Score:** | **17** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. | CI = Total Score/40 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | |
| **b. Contaminant Score** | 20 | **40** | **1.00** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.79** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| | 3 | 41.2619 | -76.5126 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 2 | | | 100-300 ft. | 2 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | | | x |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | x |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | x |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)**** | | | x |
| Stream alteration (channelization or incision) | x | | |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | x | | |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | x |
| Other: | | | x |
| **Total Number:** | **1** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | x |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| potr | 5 | | | | | | | | |
| romu | 2 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 7 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

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**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/26/2019 | 0.73 | 4 | 1.0 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.2625 | -76.5055 | Assessment Area 4 consists of wetlands W2-T4. |

**General Comments: Large PEM/PFO wetland complex located in and adjacent to an existing pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 54% | 13% | 1% | 5% | 27% | | | |
| | Score: | 20 | 18 | 12 | 7 | 4 | | | |
| | Total Sub-score: | 10.80 | 2.34 | 0.12 | 0.35 | 1.08 | 0.00 | 14.69 | 0.73 |

**Comments: Primary land uses included wetlands, streams, pasture and an existing maintained and unmaintained pipeline right-of-way**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores | |
|---|---|---|---|---|
| a. Roadbed 0-100: | 19 | * (0.67) | 13 | |
| b. Roadbed 100-300: | 19 | * (0.33) | 6 | |
| | | Total Score: | 19 | 0.95 |

**Comments: a gated grass roadbed exists within the wetland ZOI.**

**3. Vegetation Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. | |

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**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Comments:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. | | | **Low Optimal:** One vegetation stressor present within the AA boundary. | | **High Suboptimal:** Two vegetation stressors present within the AA boundary. | | | **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | | **High Marginal:** Four vegetation stressors present within the AA boundary. | | | **Low Marginal:** Five vegetation stressors present within the AA boundary. | | Greater than five vegetation stressors present within the AA boundary. | | | | | CI = Total Score/40 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 12 | **Total Score** |
| **b. Vegetation Sub-Score:** | 12 | **24** |
| | | **0.60** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. | | | **Low Optimal:** One hydrologic stressor present within the AA boundary. | | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. | | | **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | | **High Marginal:** Four hydrologic stressors present within the AA boundary. | | | **Low Marginal:** Five hydrologic stressors present within the AA boundary. | | Greater than five hydrologic stressors present within the AA boundary. | | | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | |
|---|---|
| **Score:** | **17** |
| | **0.85** |

**5. Sediment Stressor Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. | | | **Low Optimal:** One sediment stressor present within the AA boundary. | | **High Suboptimal:** Two sediment stressors present within the AA boundary. | | | **Low Suboptimal:** Three sediment stressors present within the AA boundary. | | **High Marginal:** Four sediment stressors present within the AA boundary. | | | **Low Marginal:** Five sediment stressors present within the AA boundary. | | Greater than five sediment stressors present within the AA boundary. | | | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | |
|---|---|
| **Score:** | **19** |
| | **0.95** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |

| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |

| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 15 | **Total Score:** |
| **b. Contaminant Score** | 20 | **35** |
| | | **0.88** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.83** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| | 4 | 41.2625 | -76.5055 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 1 | 1, 2 or 4 | 1 | 100-300 ft. | 1 | 1, 2 or 4 | 1 |
| Total Scores: | 0-100 ft. | 1 | | | 100-300 ft. | 1 | | |

**Road Comments: A gated grass roadbed is located in the Wetland ZOI.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | x | | |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | **3** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | x |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)*** * | | | x |
| Stream alteration (channelization or incision) | | | x |
| Other: | | | x |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | | | x |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | x | 1 | |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | **1** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| nami2 | 1 | | | | | | | | |
| mivi | | 10 | | | | | | | |
| romu | 2 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 13 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/26/2019 | 0.06 | 5 | 0.06 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.2652 | -76.4806 | AA 5 consists of W6-T6 |

**General Comments: One small PEM wetland located on an existing right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 68% | 32% | | | | | **Total Score:** | CI |
| | Score: | 20 | 3 | | | | | | |
| | Total Sub-score: | 13.60 | 0.96 | 0.00 | 0.00 | 0.00 | 0.00 | **14.56** | **0.73** |

**Comments: Primary land uses included wetlands, streams, hay fields, forests, and an existing, non-maintained right-of-way.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 20 | * (0.67) | 13 |
| **b. Roadbed 100-300:** | 20 | * (0.33) | 7 |
| | | **Total Score:** | **20** |
| | | | **1.00** |

**Comments: There are no roadbeds within the Wetland ZOI.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 19 | **Total Score** | **CI = Total Score/40** |
| **b. Vegetation Sub-Score:** | 15 | **34** | **0.85** |

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **17** | **0.85** |

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **19** | **0.95** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **1.00** |
| **b. Contaminant Score** | 20 | **40** | |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.90** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 5 | 41.2652 | -76.4806 | There are no roads within the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 0 | | | 100-300 ft. | 0 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | | | x |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | x |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | x |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)**** | | | x |
| Stream alteration (channelization or incision) | | | x |
| Other: | | | x |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | | | x |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | x |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/26/2019 | 0.32 | 6 | 0.67 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.265385° | -76.479976° | Assessment Area 6 consists of wetland W4-T6. |

**General Comments: PEM wetland in an existing right-of-way with a stream running through it.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 41% | 59% | | | | | Total Score: | CI |
| | Score: | 20 | 3 | | | | | | |
| | Total Sub-score: | 8.20 | 1.77 | 0.00 | 0.00 | 0.00 | 0.00 | 9.97 | 0.50 |

**Comments: Primary land uses included wetlands, streams, hay fields, forests, and nonmaintained right-of-way.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| a. Roadbed 0-100: | 20 | * (0.67) | 13 |
| b. Roadbed 100-300: | 20 | * (0.33) | 7 |
| | | Total Score: | 20 |

1.00

**Comments: No roads exist within the Wetland ZOI.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 19 | **Total Score** | **CI = Total Score/40** |
| **b. Vegetation Sub-Score:** | 14 | **33** | **0.83** |

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **17** | **CI = Total Score/20** |
| | | **0.85** |

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **19** | **CI = Total Score/20** |
| | | **0.95** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **CI = Total Score/40** |
| **b. Contaminant Score** | 20 | **40** | **1.00** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.85** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 6 | 41.265385° | -76.479976° | No roads exist within the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 0 | | | 100-300 ft. | 0 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | | | x |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | x |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | x |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)**** | | | x |
| Stream alteration (channelization or incision) | | | x |
| Other: | | | x |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | | | x |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | x |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/26/2019 | 0.02 | 7 | 0.03 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.266389° | -76.473537° | Assessment Area 7 consists of wetlands W1-T6 & W2-T6. |

**General Comments: Two small PEM wetlands located along an existing farm road next to an existing maintained right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| Scoring: | Condition Category: | | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| | % ZOI Area: | 71% | 5% | 20% | 4% | | | | |
| | Score: | 19 | 16 | 3 | 2 | | | | |
| | Total Sub-score: | 13.49 | 0.80 | 0.60 | 0.08 | 0.00 | 0.00 | 14.97 | 0.75 |

**Comments: Primary land uses included wetlands, forested area, maintained right-of-way, and an existing farm road.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| a. Roadbed 0-100: | 17 | * (0.67) | 11 |
| b. Roadbed 100-300: | 17 | * (0.33) | 6 |
| | | Total Score: | 17 |

**0.85**

**Comments: One farm lane travels through the Wetland ZOI.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 7 | **Total Score** | **CI = Total Score/40** |
| **b. Vegetation Sub-Score:** | 14 | **21** | **0.53** |

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **16** | **CI = Total Score/20** |
| | | **0.80** |

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **19** | **CI = Total Score/20** |
| | | **0.95** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **CI = Total Score/40** |
| **b. Contaminant Score** | 20 | **40** | **1.00** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.81** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 7 | 41.266389° | -76.473537° | One farm lane travels through the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 2 | | | 100-300 ft. | 2 | | |

**Road Comments: One farm lane travels through the Wetland ZOI.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | | | x |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | x |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | x |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)**** | | | x |
| Stream alteration (channelization or incision) | | | x |
| Other: | | | x |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | | | x |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | x |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| mivi | | | 40 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 40 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/26/2019 | 0.07 | 8 | 0.35 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.2671 | -76.4706 | Assessment Area 8 consists of wetlands W13-T6 & W14-T6. |

**General Comments: Two small, PEM wetlands located on an existing, mowed right-of-way next to a junk yard.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 22% | 7% | 1% | 48% | 13% | 9% | Total Score: |
| | Score: | 19 | 12 | 9 | 3 | 2 | 1 | CI |
| | Total Sub-score: | 4.18 | 0.84 | 0.09 | 1.44 | 0.26 | 0.09 | 6.90 / 0.35 |

**Comments: Primary land uses included wetlands, forests, maintained lawns or right-of-way, a junkyard, and roads.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments: Two gravel roads, one paved road and one dirt road exist within the 100' buffer.**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| a. Roadbed 0-100: | 11 | * (0.67) | 7 |
| b. Roadbed 100-300: | 11 | * (0.33) | 4 |
| | | Total Score: | 11 / 0.55 |

**Comments: Two gravel roads, two paved roads, and one dirt road exist within the 300' buffer.**

# Wetland Condition Assessment Form

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**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 7 | **Total Score** |
| **b. Vegetation Sub-Score:** | 14 | **21** |

**CI = Total Score/40** **0.53**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **14** |

**CI = Total Score/20** **0.70**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 14 | **34** |

**CI = Total Score/40** **0.85**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.66** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| | 8 | 41.2671 | -76.4706 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | 2 | 1 | 2 | 100-300 ft. | 2 | 1 | 2 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 6 | | | 100-300 ft. | 6 | | |

**Road Comments: Two gravel roads, two paved roads, and one dirt road exist within the 300' buffer.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | | | x |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | x |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | | **2** | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | x | 1 | |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)**** | | | x |
| Stream alteration (channelization or incision) | | | x |
| Other: | | | x |
| **Total Number:** | | **2** | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | | | x |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | x |
| Other: | | | x |
| **Total Number:** | | **0** | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | x |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | | **0** | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | x | | |
| Other: | | | x |
| **Total Number:** | | **1** | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| phar | | | 40 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 40 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-202 | Benton Loop | 7/26/2019 | 0.56 | 9 | 1.0 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Jim Haney, Carissa Butler | 41.2633 | -76.4975 | Assessment Area 9 consists of wetlands W2-T5, W4-T5, & W16-T6. |

**General Comments: Large PEM/PFO wetland complex located in an existing pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 82% | 2% | 14% | 2% | | | | |
| | Score: | 20 | 7 | 3 | 2 | | | | |
| | Total Sub-score: | 16.40 | 0.14 | 0.42 | 0.04 | 0.00 | 0.00 | 17.00 | 0.85 |

**Comments: Primary land uses included wetlands, streams, forests, and an existing pipeline right-of-way.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| a. Roadbed 0-100: | 16 | * (0.67) | 11 |
| b. Roadbed 100-300: | 16 | * (0.33) | 5 |
| | | Total Score: | 16 |

**0.80**

**Comments: An existing gravel road and existing access road (categorized as "other roadbed" in the roadbed worksheet) exist within the 0-300' Wetland ZOI buffer.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. | **CI = Total Score/40** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:** **Mown and maintaned ROW.**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 13 | **Total Score** | |
| **b. Vegetation Sub-Score:** | 14 | **27** | **0.68** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. | **CI = Total Score/20** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **0.60** |

**Comments: The channel was concreate armoured**

| | |
|---|---|
| **Score:** | **12** |

**5. Sediment Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. | **CI = Total Score/20** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **0.85** |

**Comments: Sediment from wheel ruts.**

| | |
|---|---|
| **Score:** | **17** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **1.00** |
| **b. Contaminant Score** | 20 | **40** | |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.80** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Benton Loop | | | 10/15 - 10/23/18 | David Wood, Jim Haney, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 9 | 41.2633 | -76.4975 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | 1 | 1 | 1 | 100-300 ft. | 1 | 1 | 1 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 1 | 1, 2 or 4 | 1 | 100-300 ft. | 1 | 1, 2 or 4 | 1 |
| Total Scores: | 0-100 ft. | 2 | | | 100-300 ft. | 2 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | x | | |
| Moderate livestock grazing (within one year) | | | x |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | x |
| Right-of-way clearing (mechanical or chemical) | x | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | x |
| Removal of woody debris | | | x |
| Aquatic weed control (mechanical or herbicide) | | | x |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | x |
| Plantation (conversion from typical natural tree species, including orchards) | | | x |
| Other: | | | x |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | x |
| Dike/weir/dam | | | x |
| Filling/grading | | | x |
| Dredging/excavation | | | x |
| Stormwater inputs (culvert or similar concentrated urban runoff) | x | 1 | |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | x | | |
| ***Dead or dying trees (trunks still standing)**** | | | x |
| Stream alteration (channelization or incision) | x | | |
| Other: | | | x |
| **Total Number:** | **3** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | x |
| Eroding banks/slopes | | | x |
| Active construction (earth disturbance for development) | | | x |
| Active plowing (plowing for crop planting in past year) | | | x |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | x |
| Active selective forestry harvesting (within one year) | | | x |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | x |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | x | | |
| Other: | | | x |
| **Total Number:** | **1** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | x |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | x |
| Heavy or moderately heavy formation of algal mats | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | x |
| Obvious spills, discharges, plumes, odors, etc. | | | x |
| Acidic drainages (mined sites, quarries, road cuts) | | | x |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | x |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | x |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | x |
| Excessive garbage/dumping | | | x |
| Other: | | | x |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| mivi | | 10 | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 10 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

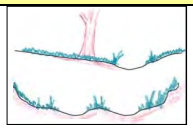
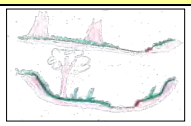
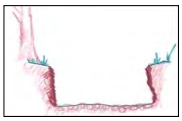
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAM-18-20 | Leidy South - Benton Loop | | Lycoming County | 07/31/2019 | Designated: CWF, MF | Existing: EV, MF | 10 | 280 ft |
| Latitude | 41.261169 | Longitude | -76.525522 | FGM Level 1 Channel Classification | | | A3 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Charly Bloom | West Branch Little Muncy Creek: S1-T1 | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| Channel / Floodplain |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| SCORE | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 12 | 0.60 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | | | |
| Riparian Vegetation (Floodplain) | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | | | | | High | | | Low | | High | | | Low | | High | | | Low | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Marginal | Poor | Poor | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 40% | 45% | 4% | 11% | | | 0.55 |
| | Score: | 19 | 7 | 5 | 1 | | | |
| | Total Sub-score: | 7.60 | 3.15 | 0.20 | 0.11 | 0.00 | 0.00 | |
| | Condition Category | Optimal | Marginal | | | | | |
| Left Side | % Riparian Area: | 36% | 64% | | | | | 0.91 |
| | Score: | 19 | 7 | | | | | |
| | Total Sub-score: | 6.84 | 6.84 | 4.48 | 0.00 | 0.00 | 0.00 | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.73 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | | | | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | | | | | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | | | | |
| | | | | | | High | | | | | Low | | | | | High | | | | | Low | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Optimal | Suboptimal | Marginal | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 3% | 5% | 40% | 52% | | | 0.52 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 19 | 13 | 7 | | | | |
| | Total Sub-score: | 0.60 | 0.95 | 5.20 | 3.64 | 0.00 | 0.00 | | |
| | Condition Category | Marginal | Poor | | | | | | |
| Left Side | % Riparian Area: | 94% | 6% | | | | | 0.33 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 7 | 1 | | | | | | |
| | Total Sub-score: | 6.58 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.43 |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 17 | 0.85 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | | | | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | | | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | | | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | | | | | CI = (Score)/20 | CI |
| | | | | | | High | | | | | Low | | | | | High | | | | | Low | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 14 | 0.70 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.66** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

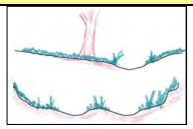
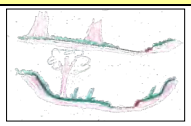
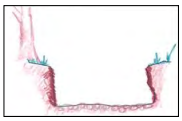
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAM-18-20 | Leidy South - Benton Loop | | Lycoming County | 07/31/2019 | Designated: CWF, MF | Existing: EV, MF | 11 | 264 ft |
| Latitude | 41.261706 | Longitude | -76.513987 | FGM Level 1 Channel Classification | | | A4 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Charly Bloom | UNT to Little Muncy Creek: S2-T2-BL | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| Channel / Floodplain |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| SCORE | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 12 | 0.60 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | | |
| Riparian Vegetation (Floodplain) | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| SCORE | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Marginal | Poor | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 51% | 45% | 4% | | | | 0.67 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 7 | 3 | | | | | |
| | Total Sub-score: | 10.20 | 3.15 | 0.12 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Optimal | Marginal | Marginal | | | | |
| Left Side | % Riparian Area: | 44% | 51% | 2% | 2% | | | 0.92 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 18 | 9 | 7 | | | | |
| | Total Sub-score: | 8.80 | 9.18 | 0.18 | 0.14 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.79 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | Comments: |
|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Suboptimal | Marginal | Poor | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 53% | 9% | 32% | 6% | | | **0.72** | **Side Sub-Index = SUM(%Areas*Scores)/20** |
| | Score: | 20 | 15 | 7 | 4 | | | | |
| | Total Sub-score: | **10.60** | **1.35** | **2.24** | **0.24** | **0.00** | **0.00** | | |
| | Condition Category | **Optimal** | **Optimal** | **Suboptimal** | **Marginal** | | | | |
| **Left Side** | % Riparian Area: | 12% | 41% | 3% | 44% | | | **0.66** | **CI = (Left Side CI + Right Side CI)/2** |
| | Score: | 20 | 18 | 15 | 7 | | | | |
| | Total Sub-score: | **2.40** | **7.31** | **0.45** | **3.08** | **0.00** | **0.00** | | |

| | CI |
|---|---|
| | **0.69** |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | | Comments: | |
|---|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | | | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | | | **SCORE 17** | **0.85** |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | Comments: | |
|---|---|---|---|---|---|---|---|---|
| | Negligible | Minor | | Moderate | | Severe | | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | **CI = (Score)/20** | **CI** |
| | | High | Low | High | Low | | | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | **SCORE 17** | **0.85** |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:* The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.76** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

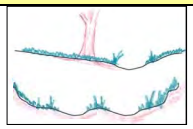
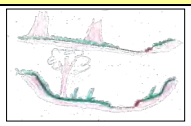
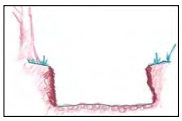
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAM-18-20 | Leidy South - Benton Loop | | Lycoming County | 07/31/2019 | Designated: CWF, MF | Existing: EV, MF | 12 | 259 ft |
| Latitude | 41.262657 | Longitude | -76.505646 | FGM Level 1 Channel Classification | | | A3 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Charly Bloom | Buck Run: S3-T3 | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| Channel / Floodplain |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| SCORE | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 16 | 0.80 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | | |
| Riparian Vegetation (Floodplain) | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| SCORE | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Optimal | Marginal | Poor | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 68% | 6% | 20% | 6% | | | 0.81 |
| | Score: | 20 | 18 | 7 | 3 | | | |
| | Total Sub-score: | 13.60 | 1.08 | 1.40 | 0.18 | 0.00 | 0.00 | |
| | Condition Category | Optimal | | | | | | |
| Left Side | % Riparian Area: | 100% | | | | | | 1.00 |
| | Score: | 20 | | | | | | |
| | Total Sub-score: | 20.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.91 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | |
| | | | | | | High | | | Low | | High | | | Low | | High | | | Low | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Sub-optimal | Sub-optimal | Marginal | Poor | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 23% | 7% | 5% | 33% | 32% | | 0.48 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 12 | 11 | 7 | 4 | | | |
| | Total Sub-score: | 4.60 | 0.84 | 0.55 | 2.31 | 1.28 | 0.00 | | |
| | Condition Category | Optimal | | | | | | | |
| Left Side | % Riparian Area: | 100% | | | | | | 1.00 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | | | | | | | |
| | Total Sub-score: | 20.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.74 |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 16 | 0.80 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | CI = (Score)/20 | CI |
| | | | | | | High | | | Low | | High | | | Low | | | | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 18 | 0.90 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | 0.83 |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

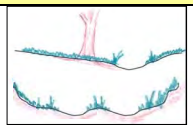
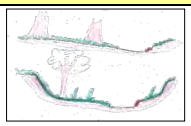
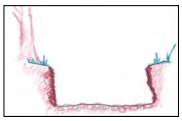
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| WILLIAM-18-20 | Leidy South - Benton Loop | Lycoming County | 8/1/2019 | Designated: CWF, MF | Existing: CWF, MF | 13 | 548 ft |
| Latitude | 41.262962, 41.263418 | Longitude | -76.499187, -76.498124 | FGM Level 1 Channel Classification | | B3 | |

| Evaluator(s) | Stream Name and Information | Notes: S3-T5: UNT to Little Muncy Creek, S2-T5: Little Muncy Creek |
|---|---|---|
| Charly Bloom | S3-T5; Little Muncy Creek: S2-T5 | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| |  |  | |  | |
| **Channel / Floodplain** | **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. | **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. | **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 10 | 0.50 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | | | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | | | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | | | | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | | | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | | | | | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | | | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | | | |
| | | | | | | High | | | | | Low | | | | | High | | | | | Low | | | |
| **SCORE** | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Optimal | Marginal | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 42% | 16% | 42% | | | | 0.72 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 19 | 7 | | | | | |
| | **Total Sub-score:** | 8.40 | 3.04 | 2.94 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Optimal | Marginal | | | | | |
| **Left Side** | % Riparian Area: | 42% | 44% | 14% | | | | 0.89 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 19 | 7 | | | | | |
| | **Total Sub-score:** | 8.40 | 8.36 | 0.98 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.80 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | Comments: |
|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 50% | 50% | | | | | **0.68** |
| | Score: | 20 | 7 | | | | | |
| | Total Sub-score: | **10.00** | **3.50** | **0.00** | **0.00** | **0.00** | **0.00** | |
| | Condition Category | **Optimal** | **Optimal** | **Marginal** | | | | |
| **Left Side** | % Riparian Area: | 34% | 65% | 1% | | | | **0.96** |
| | Score: | 20 | 19 | 7 | | | | |
| | Total Sub-score: | **6.80** | **12.35** | **0.07** | **0.00** | **0.00** | **0.00** | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

**CI = (Left Side CI + Right Side CI)/2** — **CI: 0.82**

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | Comments: |
|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | CI = (Score)/20 — CI |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | | SCORE 11 — **0.55** |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | Comments: |
|---|---|---|---|---|---|---|
| | Negligible | Minor | | Moderate | | Severe | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | CI = (Score)/20 — CI |
| | | High | Low | High | Low | | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | SCORE 9 — **0.45** |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.62** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

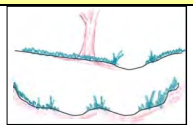
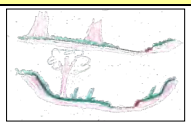
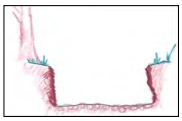
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAM-18-202 | Leidy South - Benton Loop | | Lycoming County | 07/31/2019 | Designated: CWF, MF | Existing: EV, MF | 14 | 254 ft |
| **Latitude** | 41.264743 | **Longitude** | -76.486632 | **FGM Level 1 Channel Classification** | | | A6 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Charly Bloom | UNT to Little Muncy Creek: S6-T6 | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| **SCORE** | 12 | 0.60 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | High | Low | High | Low |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 46% | 54% | | | | | 0.65 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 7 | | | | | | |
| | **Total Sub-score:** | 9.20 | 3.78 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Marginal | | | | | | |
| **Left Side** | % Riparian Area: | 47% | 53% | | | | | 0.66 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 7 | | | | | | |
| | **Total Sub-score:** | 9.40 | 3.71 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.65 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | |
| | | | | | | High | | | Low | | High | | | Low | | High | | | Low | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 51% | 49% | | | | | 0.68 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 7 | | | | | | |
| | Total Sub-score: | 10.20 | 3.43 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Marginal | | | | | | |
| Left Side | % Riparian Area: | 45% | 55% | | | | | 0.64 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 7 | | | | | | |
| | Total Sub-score: | 9.00 | 3.85 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.66 |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 11 | 0.55 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | | CI = (Score)/20 | CI |
| | | | | | | High | | | Low | | High | | | Low | | | | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 14 | 0.70 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.63** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

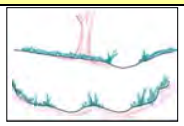
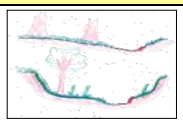
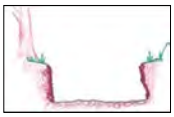
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| WILLIAM-18-202 | Leidy South - Benton Loop | Lycoming County | 07/31/2019 | Designated: CWF, MF | Existing: EV, MF | 15 | 309 ft |
| Latitude | 41.265437 | Longitude | -76.484781 | FGM Level 1 Channel Classification | | A6 | |

| Evaluator(s) | Stream Name and Information | Notes: UNT to Little Muncy Creek. Ephemeral stream. |
|---|---|---|
| Charly Bloom | S5-T6 | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| Channel / Floodplain |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| SCORE | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 3 | 0.15 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | | |
|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | |
| Riparian Vegetation (Floodplain) | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| SCORE | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Optimal | Suboptimal | Marginal | Marginal | Poor | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 19% | 1% | 37% | 9% | 26% | 8% | 0.62 |
| | Score: | 20 | 17 | 15 | 9 | 7 | 2 | |
| | Total Sub-score: | 3.80 | 0.17 | 5.55 | 0.81 | 1.82 | 0.16 | |
| | Condition Category | Optimal | Optimal | Suboptimal | Marginal | Marginal | Poor | |
| Left Side | % Riparian Area: | 27% | 2% | 5% | 4% | 39% | 23% | 0.48 |
| | Score: | 20 | 17 | 15 | 9 | 7 | 0 | |
| | Total Sub-score: | 5.40 | 0.34 | 0.75 | 0.36 | 2.73 | 0.03 | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.55 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | |
| | | | | | | High | | | Low | | High | | | Low | | High | | Low | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Suboptimal | Marginal | Marginal | Poor | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 41% | 11% | 31% | 9% | 8% | | 0.67 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 15 | 9 | 7 | 2 | | | |
| | Total Sub-score: | 8.20 | 1.65 | 2.79 | 0.63 | 0.16 | 0.00 | | |
| | Condition Category | Optimal | Optimal | Suboptimal | Marginal | Marginal | | | |
| Left Side | % Riparian Area: | 42% | 12% | 16% | 4% | 26% | | 0.75 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 17 | 15 | 9 | 7 | | | |
| | Total Sub-score: | 8.40 | 2.04 | 2.40 | 0.36 | 1.82 | 0.00 | | |

| | CI |
|---|---|
| | 0.71 |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | | | | | | | | | | | | | | | | Comments: Not applicable. Stream is not perennial. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE | 0.00 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | Comments: | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | | |
| | | | | | | High | | | Low | | High | | | Low | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 5 | 0.25 |

| RIVERINE CONDITION INDEX (RCI) | RCI |
|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** RCI = (Sum of all CI's)/5 | 0.41 |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

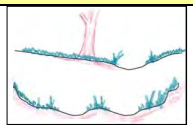
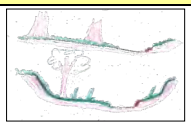
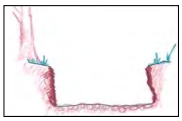
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAM-18-20 | Leidy South - Benton Loop | | Lycoming County | 07/31/2019 | Designated: CWF, MF | Existing: CWF, MF | 16 | 280 ft |
| Latitude | 41.265478 | Longitude | -76.480231 | FGM Level 1 Channel Classification | | | A4 | |

| Evaluator(s) | Stream Name and Information | Notes: UNT to Little Muncy Creek |
|---|---|---|
| Charly Bloom | S2-T6 | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| |  |  | |  | |
| **Channel / Floodplain** | **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. | **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. | **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 9 | 0.45 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | | | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | | | | | High | | | Low | | High | | | | | Low | | | | | High | | | Low |
| **SCORE** | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | Optimal | Optimal | Poor | | | | Side Sub-Index | |
| Right Side | % Riparian Area: | 28% | 46% | 26% | | | | 0.71 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 17 | 3 | | | | | |
| | Total Sub-score: | 5.60 | 7.82 | 0.78 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Optimal | Marginal | | | | | |
| Left Side | % Riparian Area: | 69% | 14% | 17% | | | | 0.87 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 17 | 7 | | | | | |
| | Total Sub-score: | 13.80 | 2.38 | 1.19 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.79 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | |
| | | | | | | High | | | | Low | High | | | | Low | High | | | | Low | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Poor | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 2% | 98% | | | | | 0.16 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 17 | 3 | | | | | | |
| | Total Sub-score: | 0.34 | 2.94 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Optimal | Marginal | | | | | |
| Left Side | % Riparian Area: | 92% | 8% | | | | | 0.99 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 18 | | | | | | |
| | Total Sub-score: | 18.40 | 1.44 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.58 |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: Not applicable. Stream is not perennial. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | SCORE | 0.00 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present | | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | | CI = (Score)/20 | CI |
| | | | | | | High | | | | Low | High | | | | Low | | | | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | SCORE 10 | 0.50 |

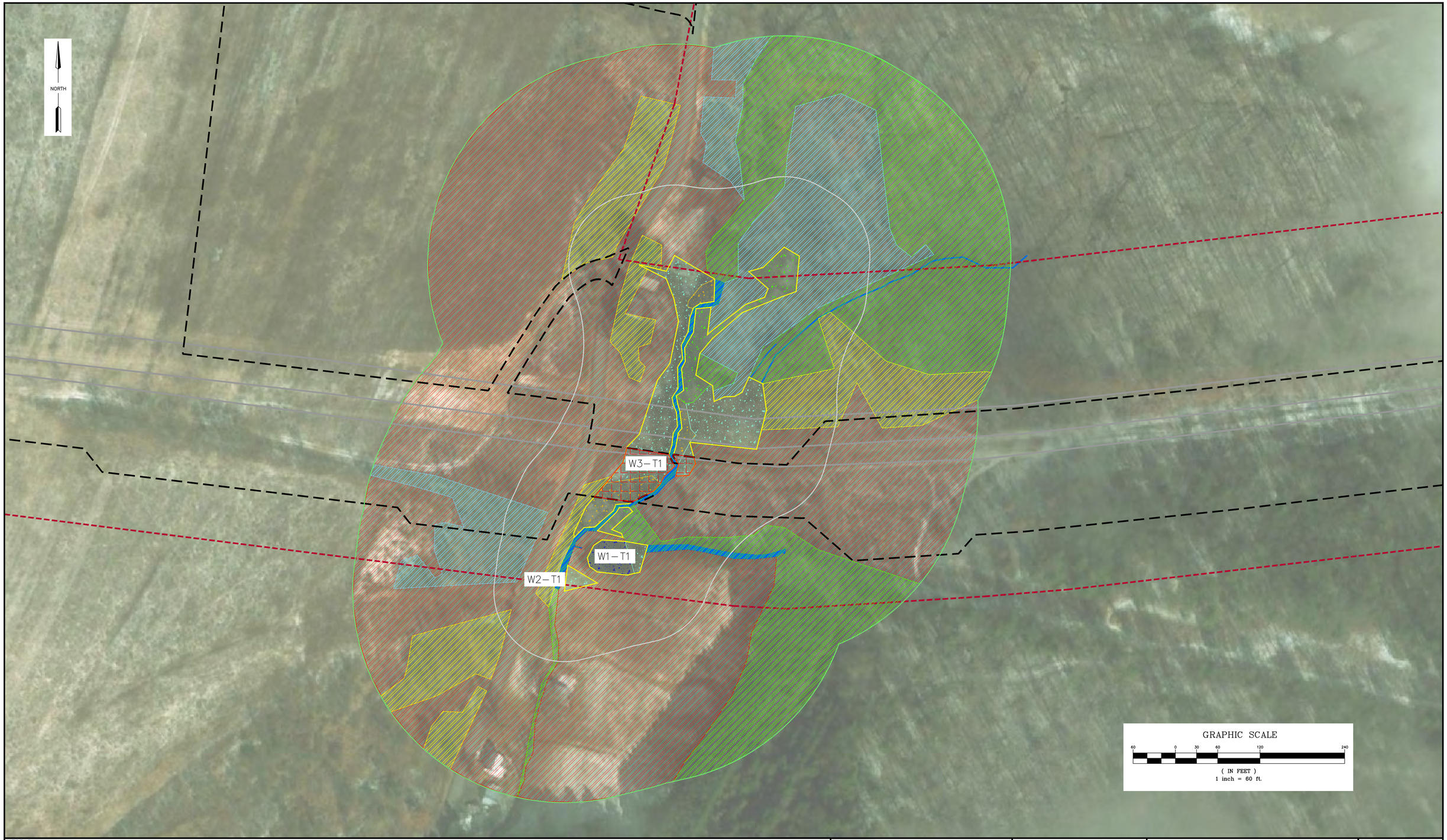
| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | 0.58 |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

ATTACHMENT B

FIGURES




LEGEND

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN–ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

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SCONTINENTAL GAS PIPE LINE COMPANY, LLC

LEIDY SOUTH PROJECT
BENTON LOOP

WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 1 (W1–T1, W2–T1, W3–T1)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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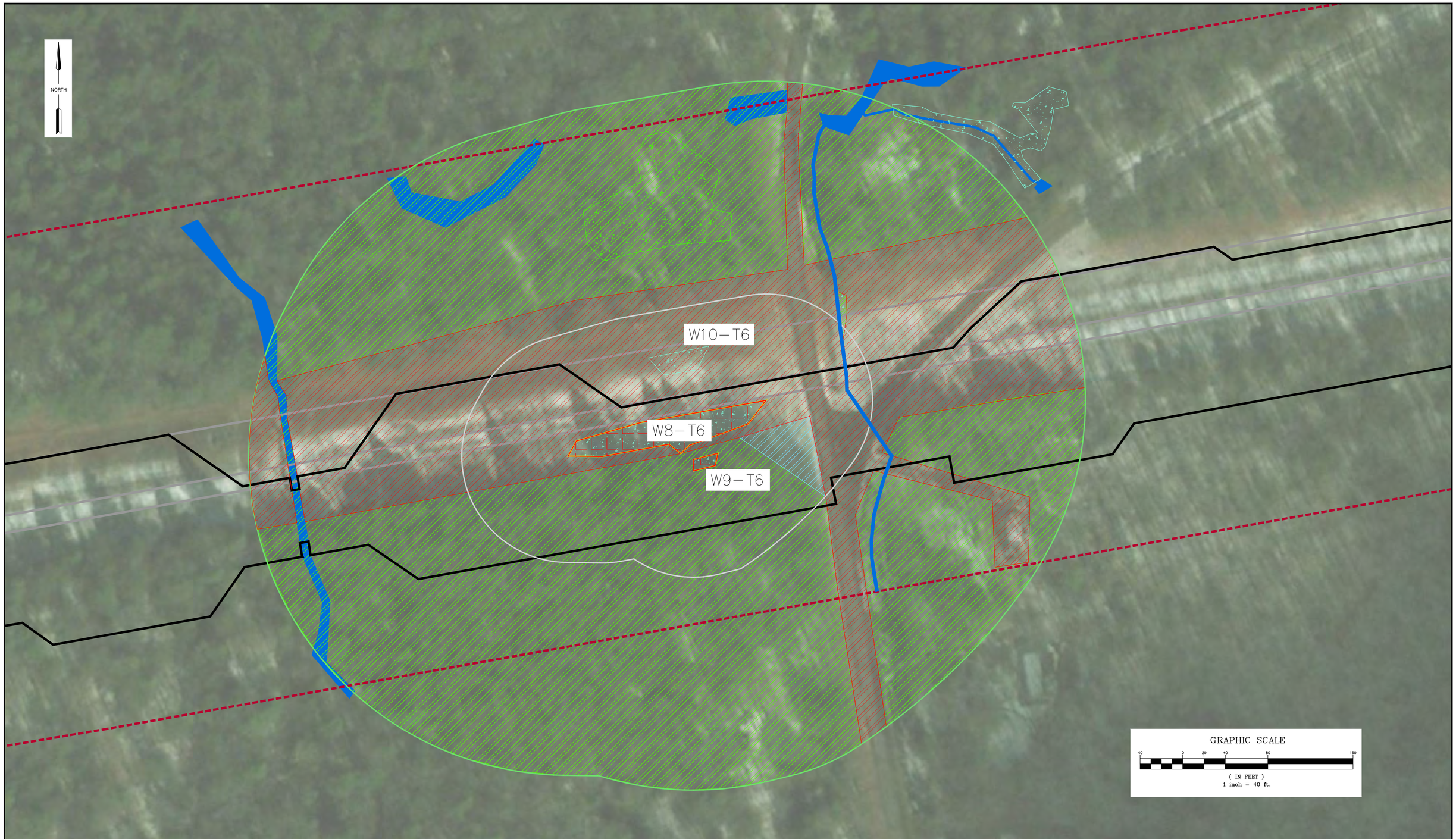


LEGEND

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ASSESSMENT AREA 2 (W8–T6, W9–T6, & W10–T6)

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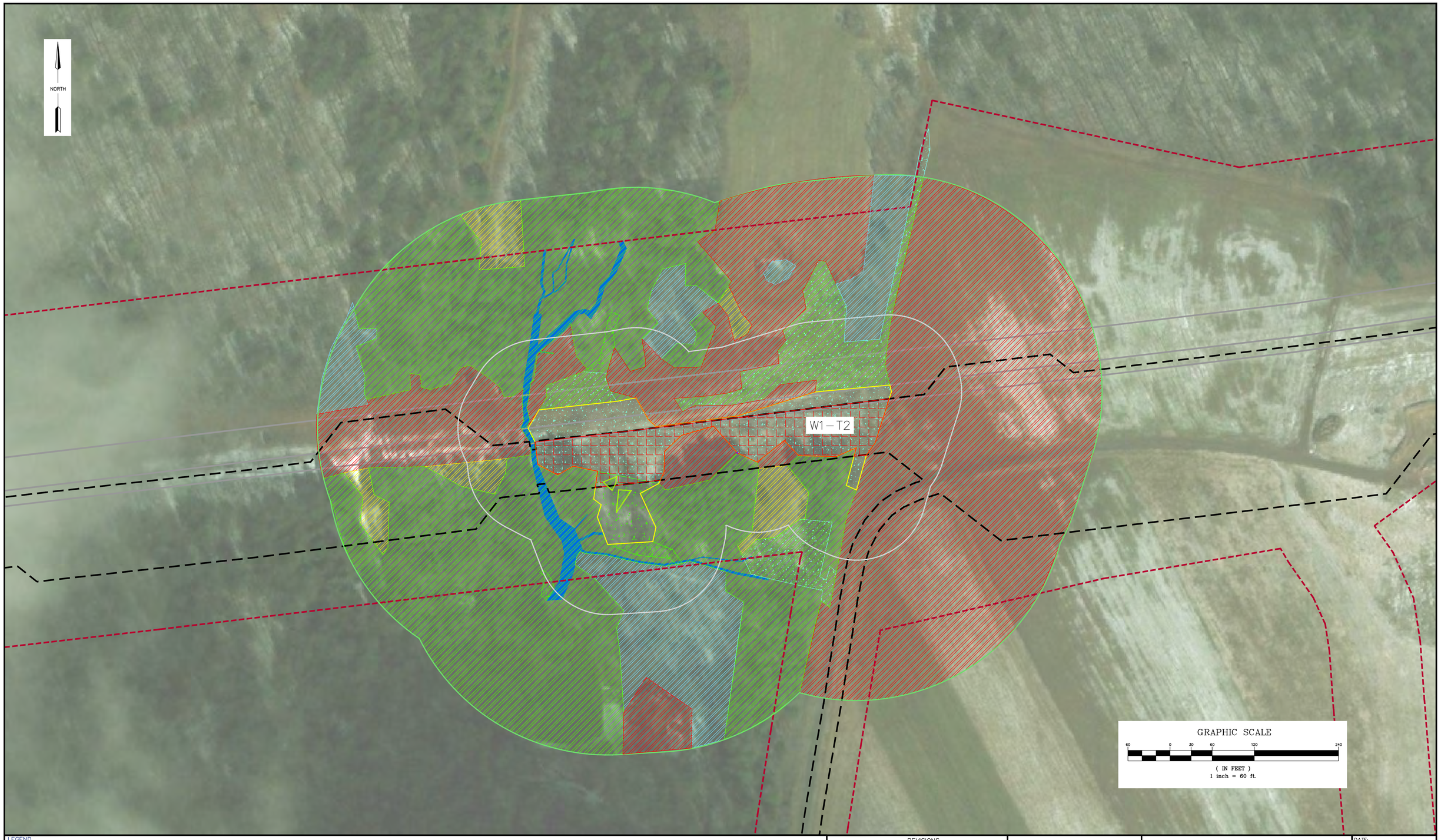


LEGEND

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LEGEND

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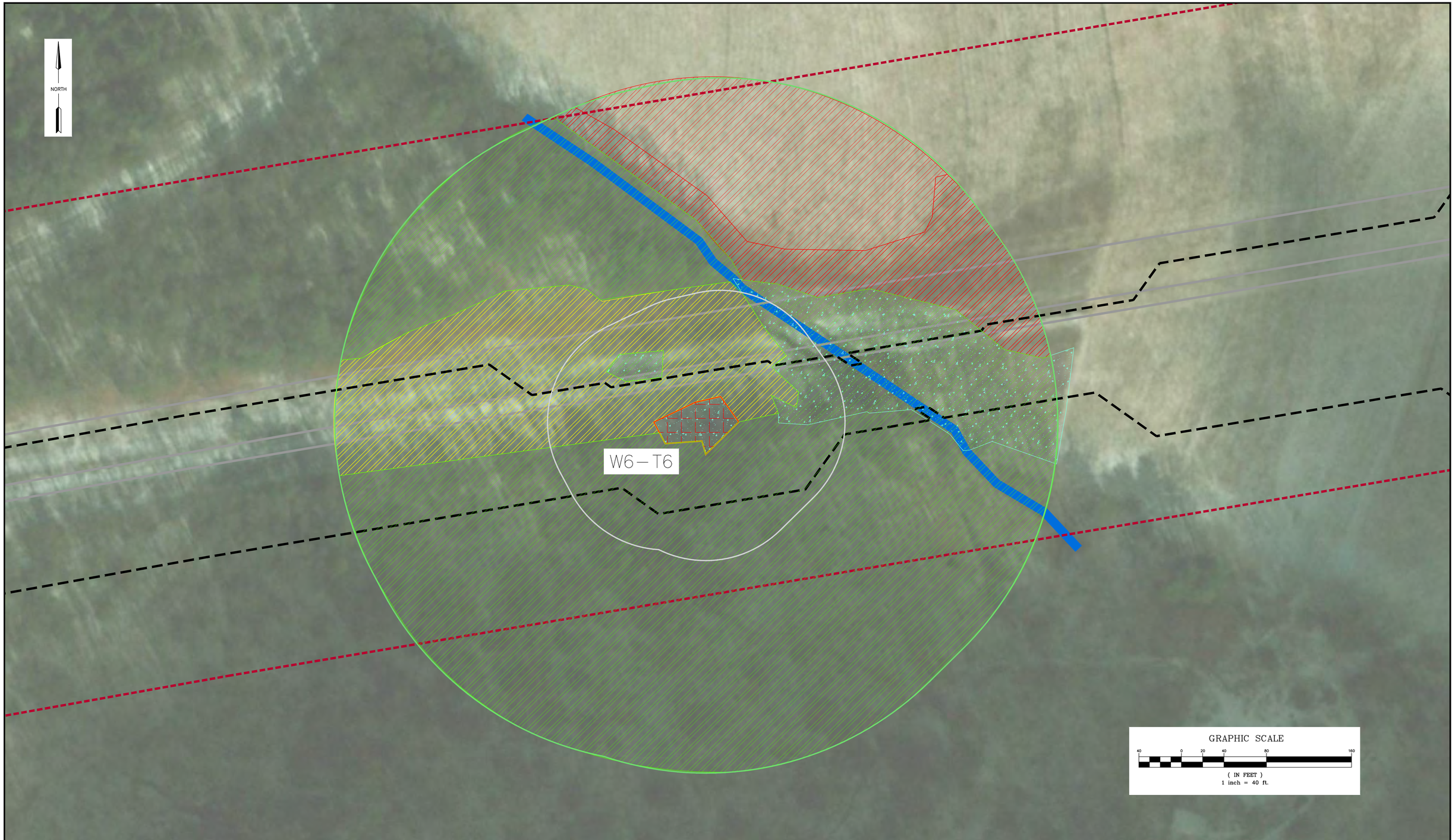


LEGEND

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WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 5 (W6–T6)

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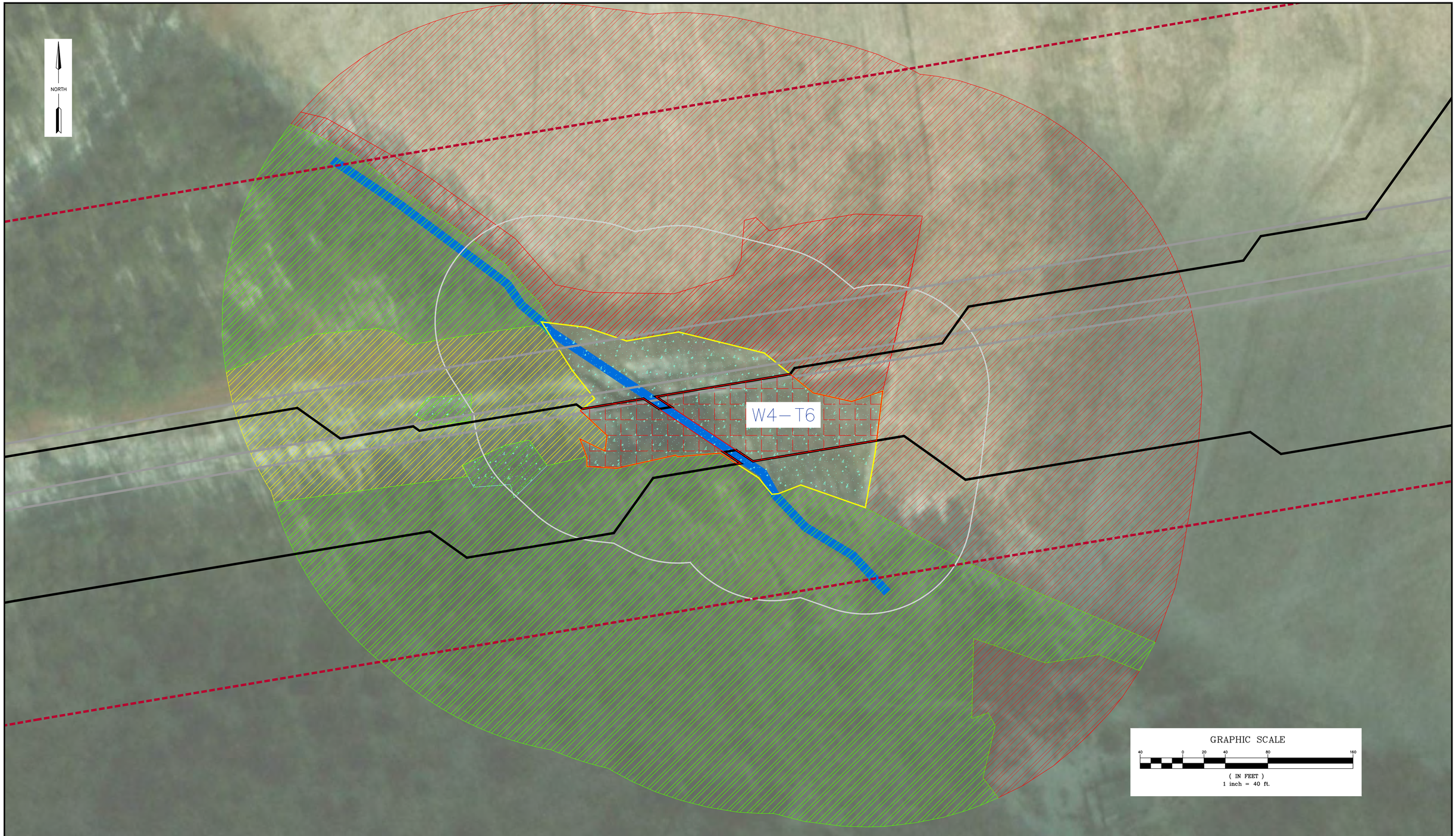


LEGEND

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WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 6 (W4–T6)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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LEGEND

- WETLAND IMPACT
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WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 7 (W1–T6 & W2–T6)

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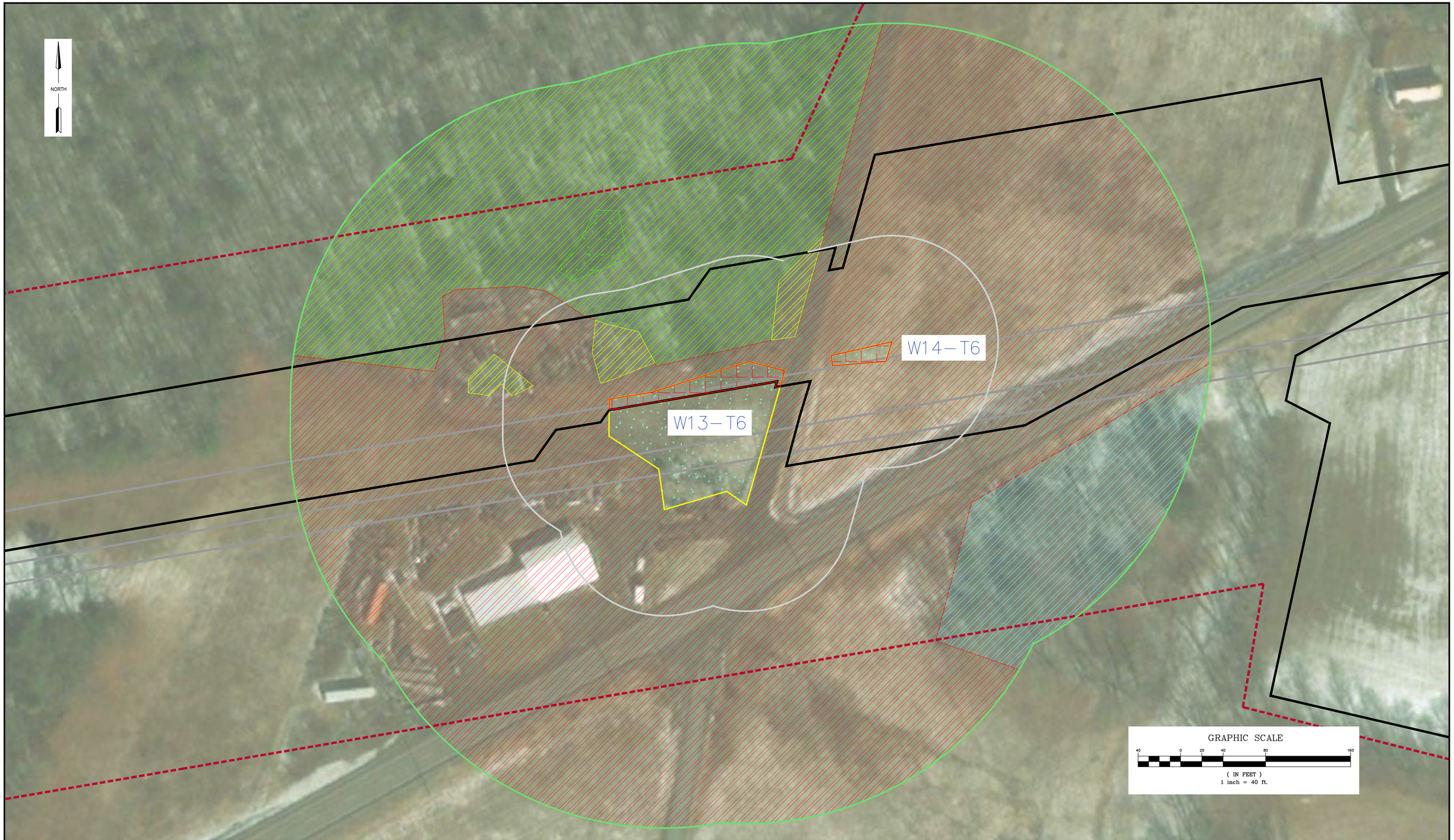


LEGEND

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WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 8 (W13–T6&W14–T6)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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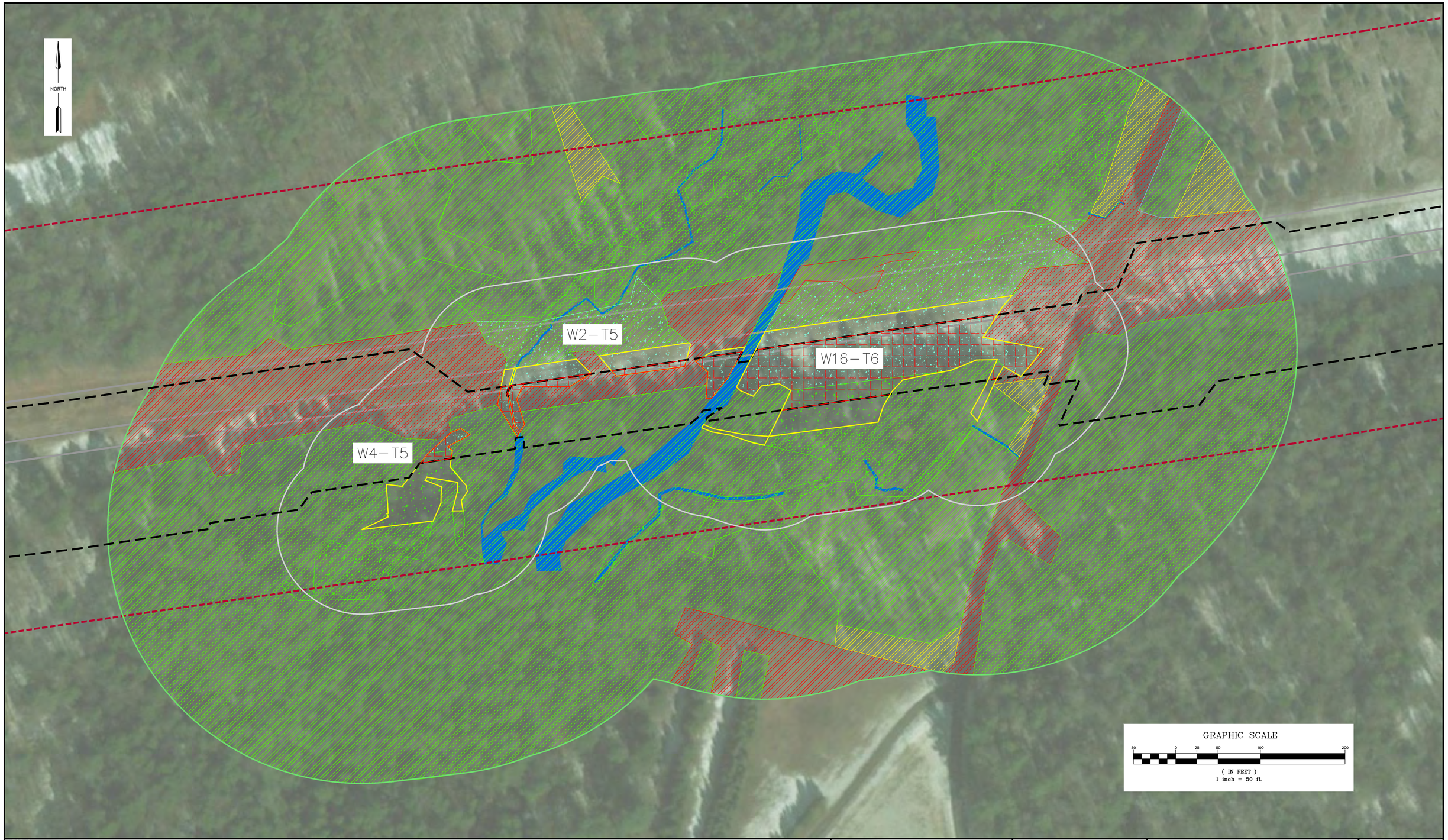


LEGEND

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- CONDITION CATEGORY – POOR

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LEIDY SOUTH PROJECT
BENTON LOOP

WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 9 (W2–T5, W4–T5, & W16–T6)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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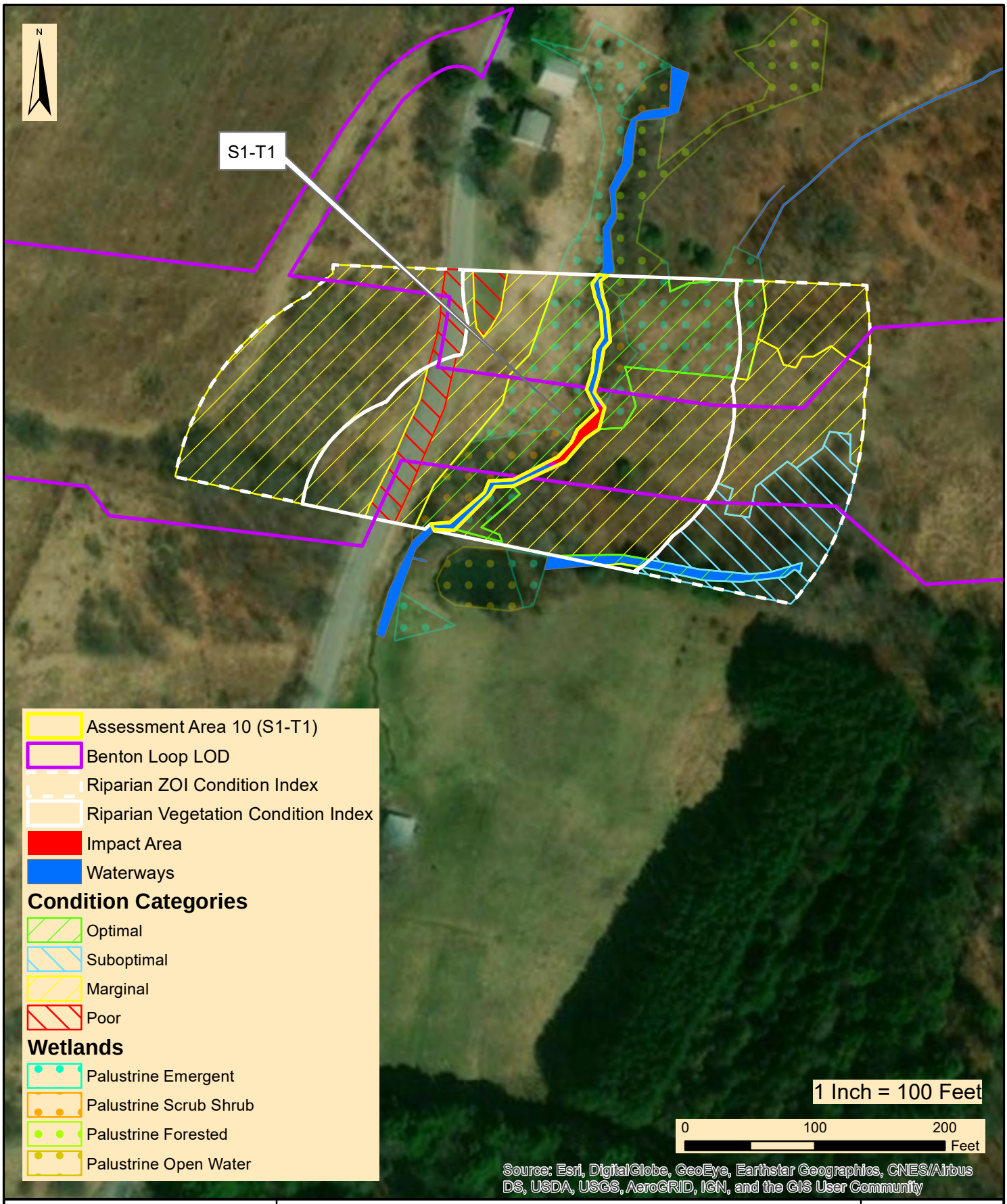


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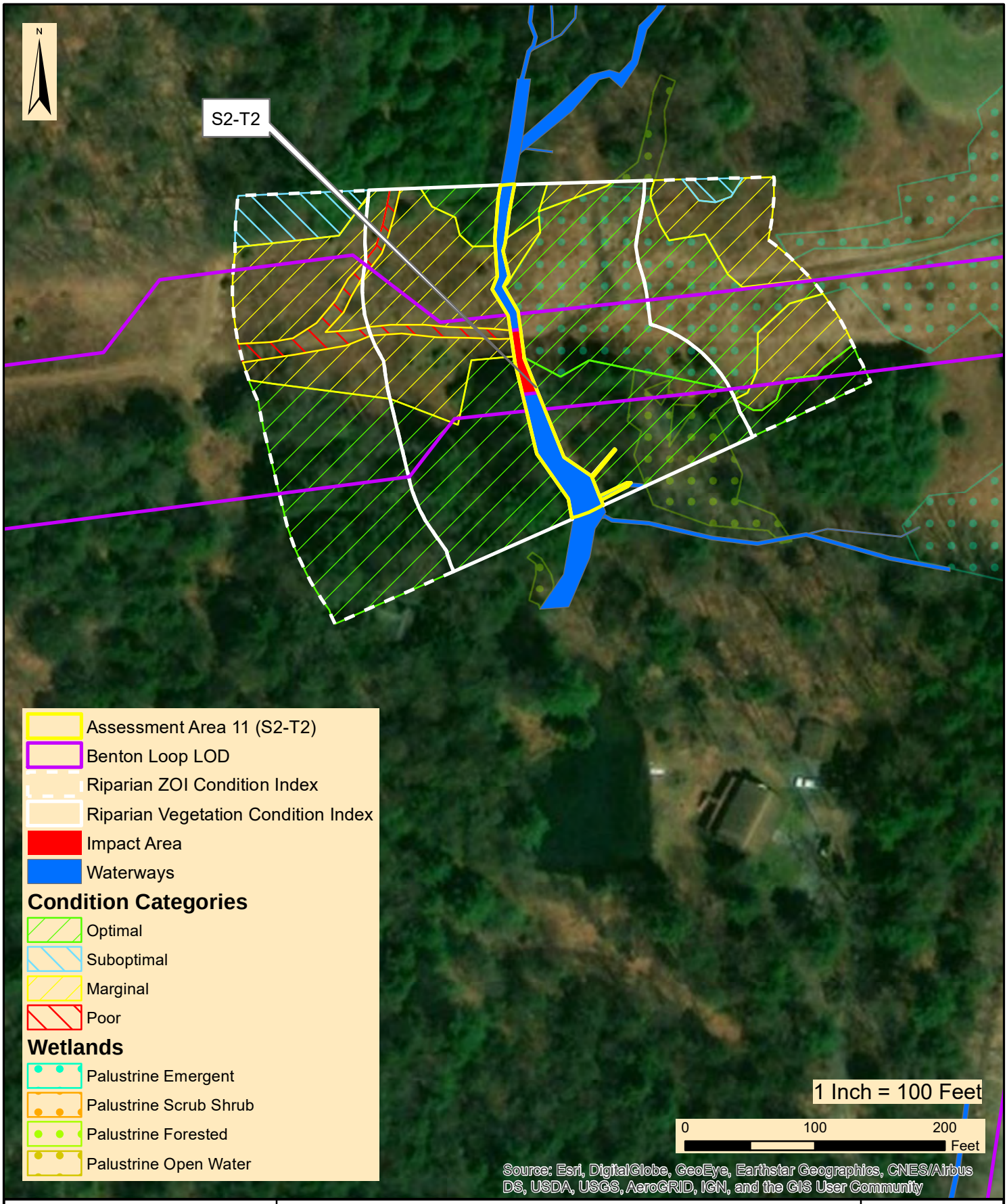
**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - BENTON LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 10 (S1-T1)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 08/02/2019 |
| WHM Drawing Number: | WILLIAMS202A010 |
| Drawn By: | CMG |
| Figure Number: | 10 |

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**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - BENTON LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 11 (S2-T2)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 08/02/2019 |
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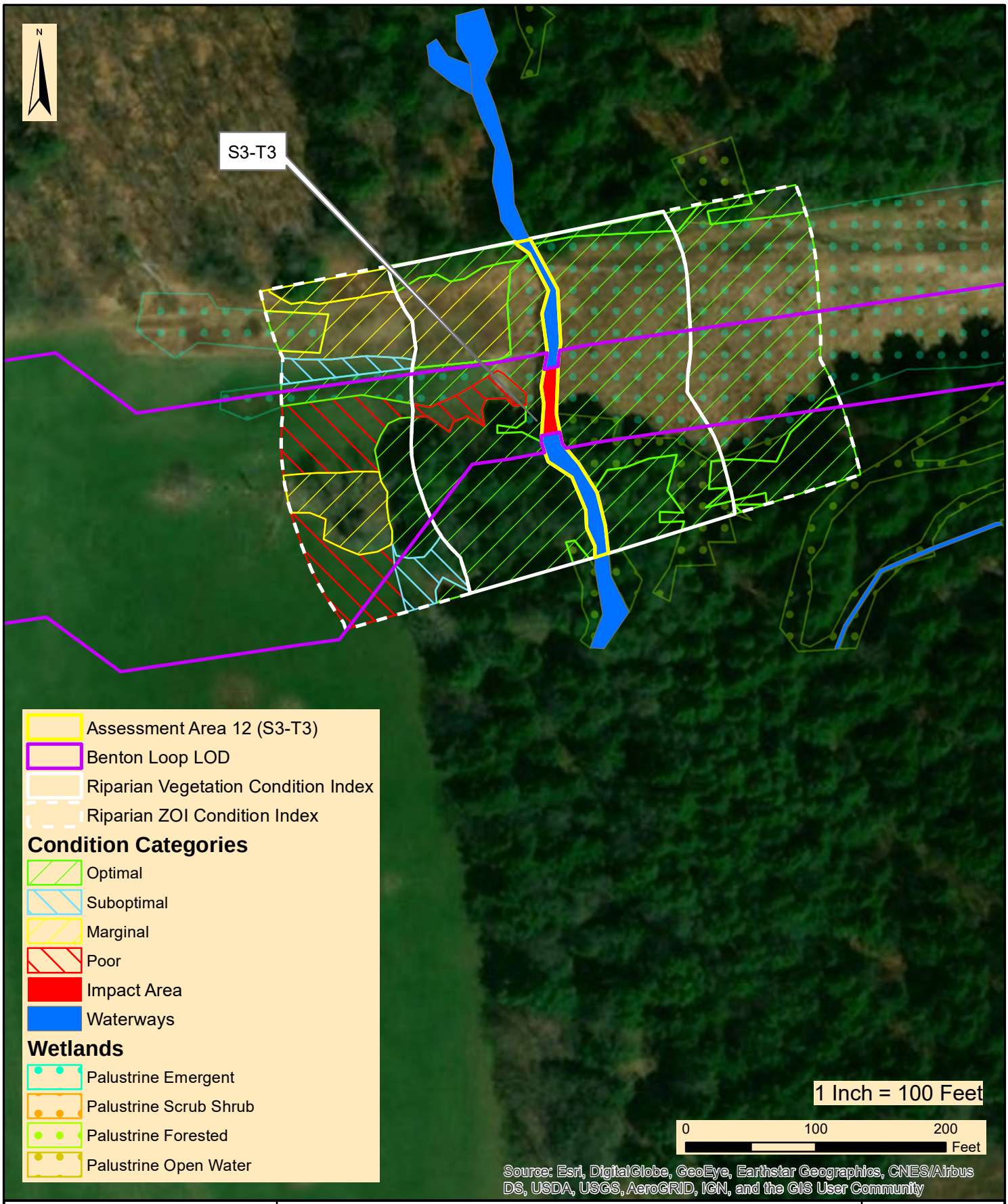


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LEIDY SOUTH PROJECT - BENTON LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 12 (S3-T3)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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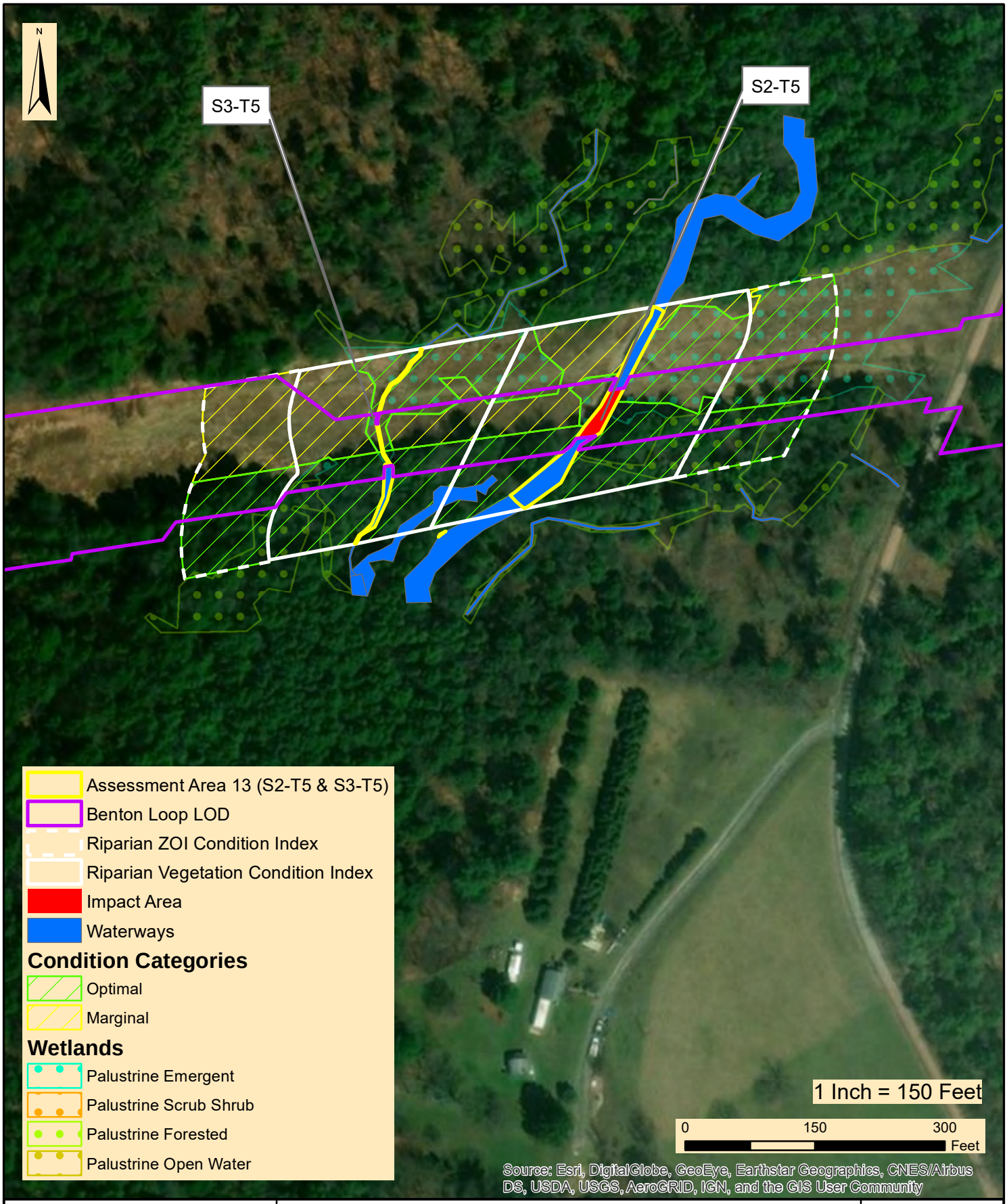


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LEIDY SOUTH PROJECT - BENTON LOOP

STREAM FUNCTIONALASSESSMENT - ASSESSMENT AREA 13 (S2-T5 & S3-T5)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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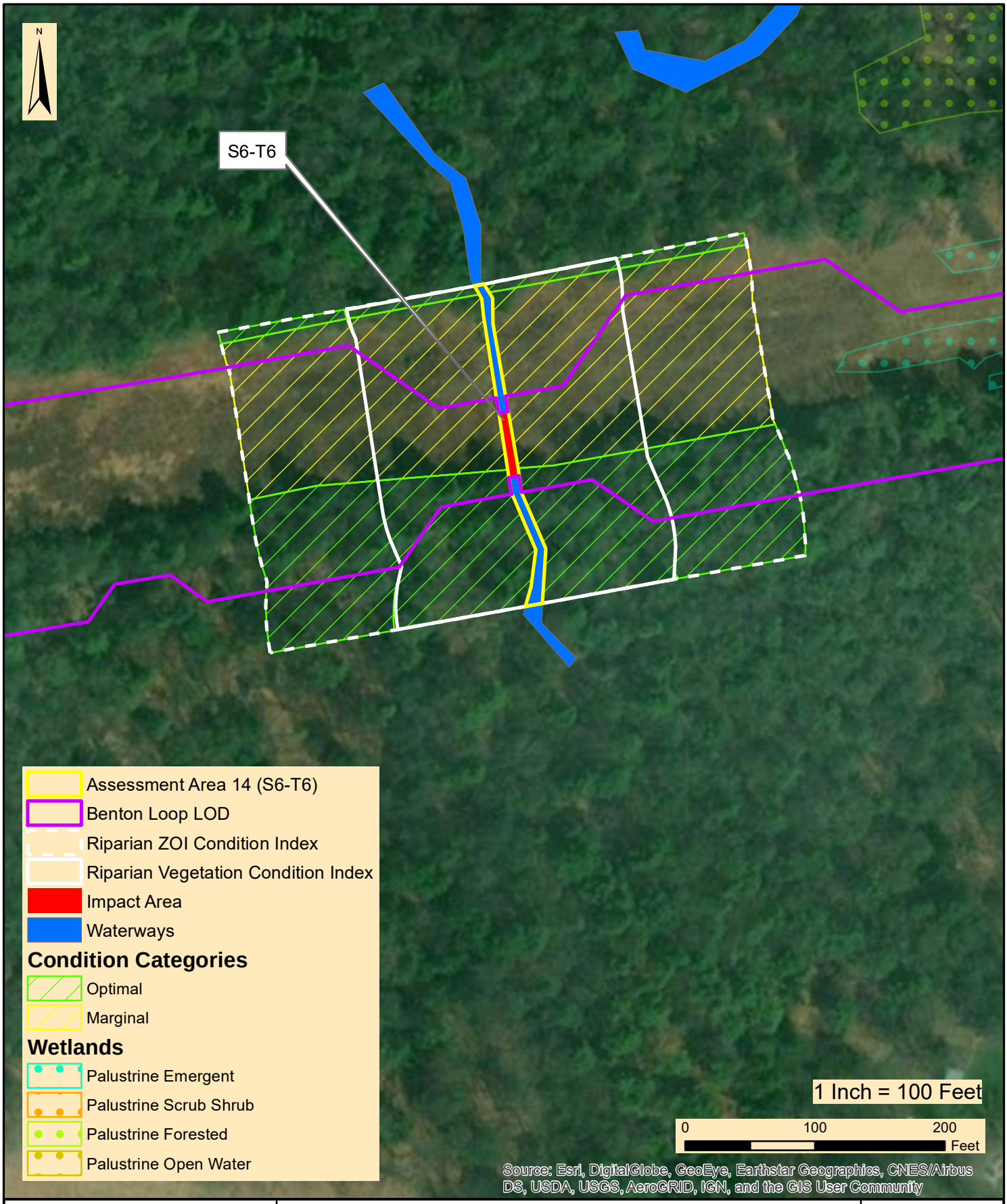


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**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - BENTON LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 14 (S6-T6)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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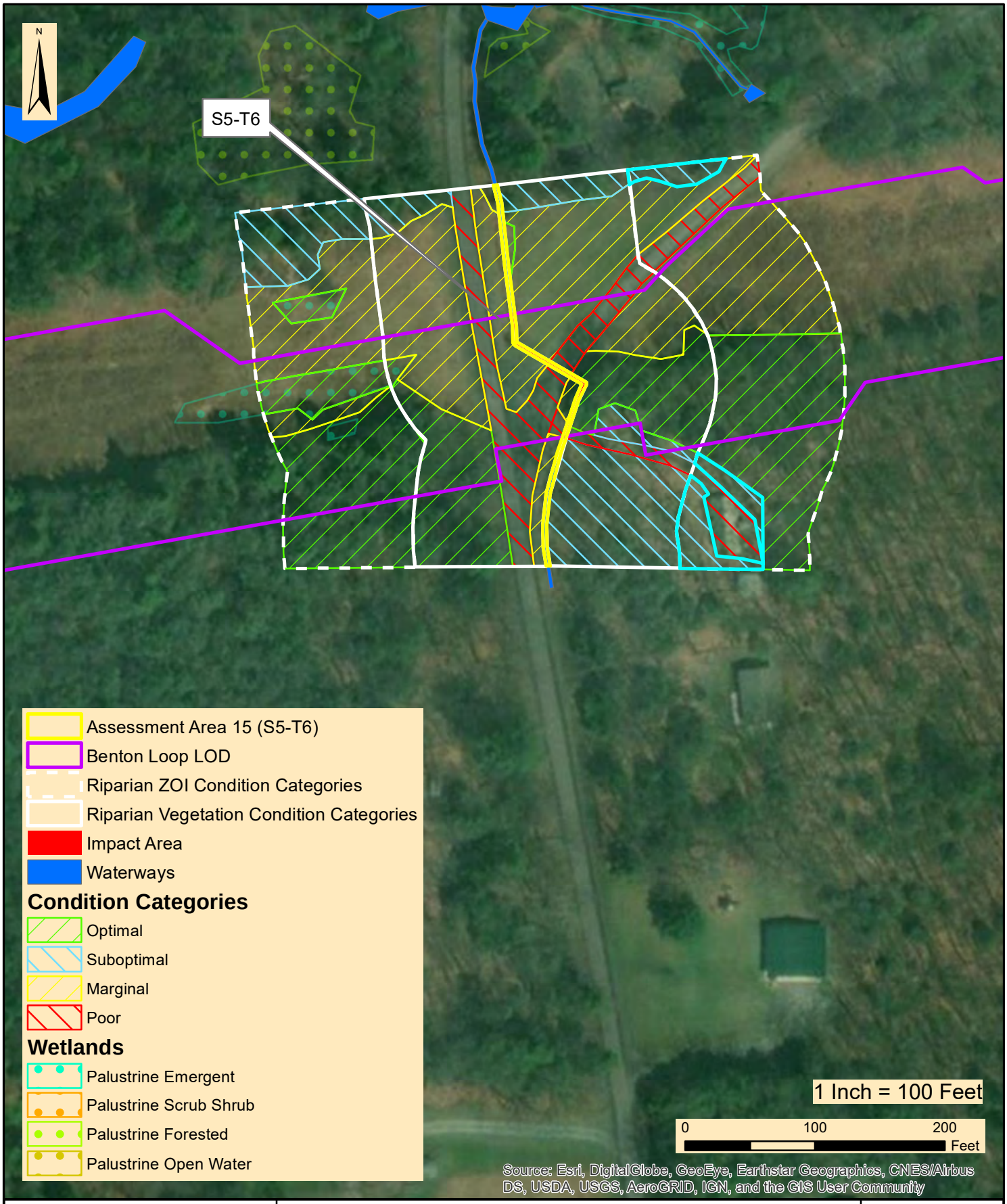


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**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - BENTON LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 15 (S5-T6)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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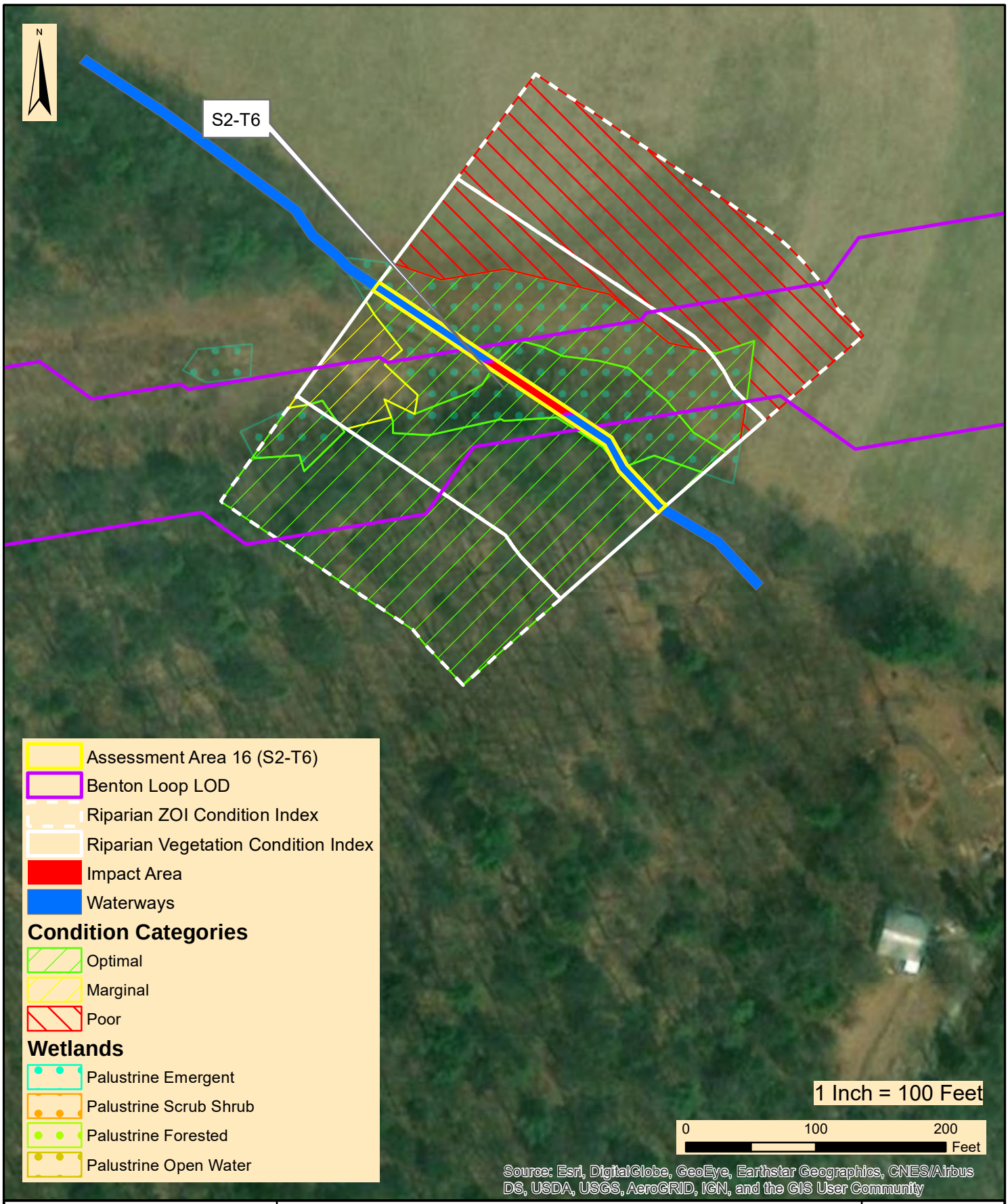


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**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - BENTON LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 16 (S2-T6)

JORDAN TOWNSHIP LYCOMING COUNTY PENNSYLVANIA

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| Date: | 08/06/2019 |
| WHM Drawing Number: | WILLIAMS202A016 |
| Drawn By: | CMG |
| Figure Number: | 16 |

# APPENDIX D

# HILLTOP LOOP WETLAND AND WATERCOURSE DELINEATION REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX D
HILLTOP LOOP WETLAND AND WATERCOURSE DELINEATION REPORT

CHAPMAN TOWNSHIP, CLINTON COUNTY, PENNSYLVANIA

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- 2.2 Aerial Photography
- 2.3 National Wetland Inventory
- 2.4 USDA/NRCS Soil Descriptions

3.0 Results

- 3.1 Wetlands
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4.0 Conclusions
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2 USDA-NRCS Soils and NWI Map
3 Wetland Delineation Key Map


Attachments


A Wetland and Water Resource Delineation Data Package

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- .... Photographic Documentation
- .... Wetland, Upland and Waterway Data Forms

B Wetland and Water Resource Summary Table

C Pennsylvania Level 2 Rapid Assessment Report

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX D
HILLTOP LOOP WETLAND AND WATERCOURSE DELINEATION REPORT

CHAPMAN TOWNSHIP, CLINTON COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Transco) to conduct a delineation of wetland and water resources associated with the Hilltop Loop (Project) located in Chapman Township, Clinton County, Pennsylvania (Figure 1 – Project Location Map). The purpose of this investigation was to determine whether regulated wetlands and waters exist within the subject project area in accordance with U.S. Army Corps of Engineers (USACE) guidelines which as regulated under Section 404 of the Clean Water Act (CWA) and Pa Code 25 Chapter 105. This report provides information on the desktop analysis, data collected, delineation field findings, and results pertaining to wetland and water resources identified in the study area. The delineation was performed in November 2018, April 2019 and May 2019.

# 2.0 DESKTOP ANALYSIS

Prior to conducting field investigations, a review of natural resource data associated with the investigation area was completed to help establish probable areas where wetlands and watercourses could be located before conducting the onsite field investigation. The following sections outlined specific data reviewed for the investigation area.

## 2.1 USGS TOPOGRAPHIC AND LiDAR DATA

The 7.5-minute USGS quadrangles for Young Woman's Creek and Renovo East, Pennsylvania, were reviewed in the vicinity of the project area. For more detailed topographic information, the PAMAP LiDAR (2-foot Intervals) was reviewed to determine slope breaks and microtopography that could result in wetlands and/or waterways.

## 2.2 AERIAL PHOTOGRAPHY

Multiple sources of online accessible current and historical aerial imagery were reviewed. In particular, leaf-off aerial imagery was evaluated for saturation that may persist long enough into the growing season to create wetland conditions. Aerial flyover imagery was also reviewed prior to field investigations.

## 2.3 NATIONAL WETLAND INVENTORY

The U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) mapping within and surrounding the project area is presented in Figure 2 - USDA-NRCS Soils and NWI Map. According to NWI mapping there are four NWI wetlands located within, or within 500 feet of, the investigation area and are classified as the following:

PEM1E – Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated
PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded
PUBHh – Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

## 2.4 USDA/NRCS SOIL DESCRIPTIONS

The soil associations onsite are identified through the soil map units mapped by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) in the Soil Survey of Clinton County, Pennsylvania. In addition, the hydric soils list for Clinton County was reviewed to determine if these soils are Hydric Soils or contain Hydric Inclusions. There are 12 soil mapping units located within the investigation area. Each soil series and their hydric rating is provided in Table 2-1.

| Soil Mapping Unit | Map Unit Name | Slope (%) | Hydric Soil/ Hydric Inclusion |
|---|---|---|---|
| Bb | Barbour-Craigsville Complex | - | Yes |
| CfB | Clymer channery loam, extremely stony | 0 to 8 | No |
| CgB | Clymer-Cookport channery loams, extremely stony | 0 to 8 | No |
| CpB | Cookport channery loam, extremely stony | 0 to 8 | Yes |
| CpD | Cookport channery loam, extremely stony | 8 to 25 | No |
| HkE | Hazleton channery sandy loam, rubbly | 25 to 80 | No |
| HmD | Hazleton-Clymer channery loams, extremely stony | 8 to 25 | No |
| HoF | Hazelton-Laidig complex, extremely stony | 25 to 50 | No |
| LdC | Laidig gravelly loam, extrmemely stony | 8 to 25 | No |
| Lr | Linden silt loam, rarely flooded | - | No |
| WeB | Wharton silt loam, very stony | 0 to 8 | No |
| WgB | Wharton-Cookport complex, very stony | 0 to 8 | Yes |

Table 2-1: Soil Mapping Unit and Hydric Soils Listing

# 3.0 RESULTS

After the completion of a desktop analysis, a formal wetland delineation was completed. Areas exhibiting the potential for regulated wetlands and waters were evaluated to determine whether they satisfied the USACE and/or PADEP requirements. A total of nineteen (19) wetlands and fifteen (15) stream channels were identified during the delineation. Attachment A includes specific information for each resource including: wetland delineation mapping, photographic documentation, and data forms. Attachment B – Wetland and Water Resource Summary Tables, provides specific information for each resource identified within the investigation area. The Pennsylvania Level 2 Rapid Assessment Report is provided in Attachment C. The following sections provide a brief summary of the resources identified within the investigation area.

## 3.1 WETLANDS

In total, nineteen (19) wetlands were identified during the delineation. Most of the wetlands identified had been previously impacted during past projects within the existing ROW. Wetland were defined as either “Other” or “Exceptional Value” based on Pa Code Title 25, Chapter 105.17 – Wetlands. Approximately 149,492 square feet of PEM wetlands, 1,739 square feet of palustrine scrub-shrub (PSS) wetlands, 171,740 square feet of palustrine forested (PFO) wetlands, and 3,489 feet of palustrine open water (POW) wetlands were identified.

### 3.2 WATERWAYS

In total, fifteen (15) waterways were identified during the delineation. Most of the waterways identified have been previously impacted during past projects within the existing ROW. Approximately 4,620 square feet of ephemeral channels, 24,251 square feet of intermittent channels, and 52,017 square feet of perennial channels were identified.

## 4.0 CONCLUSIONS

Based on the results of the field investigation 326,460 square feet of wetlands and 80,888 square feet of stream channel were identified within the investigation area. Any impacts to the identified resources would require authorization under PADEP and USACE guidelines.

## 5.0 REFERENCES


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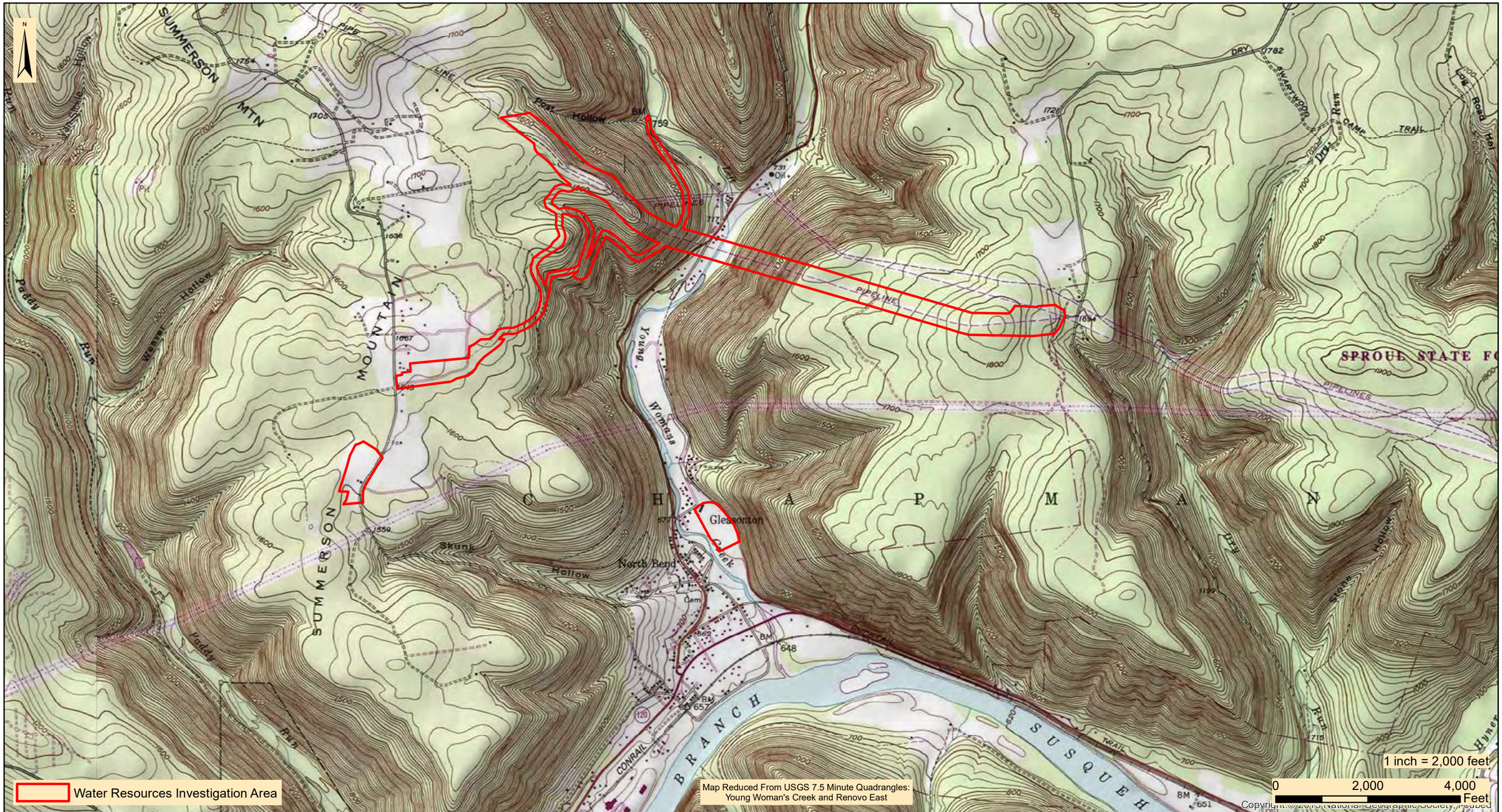
FIGURES

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### PROJECT LOCATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
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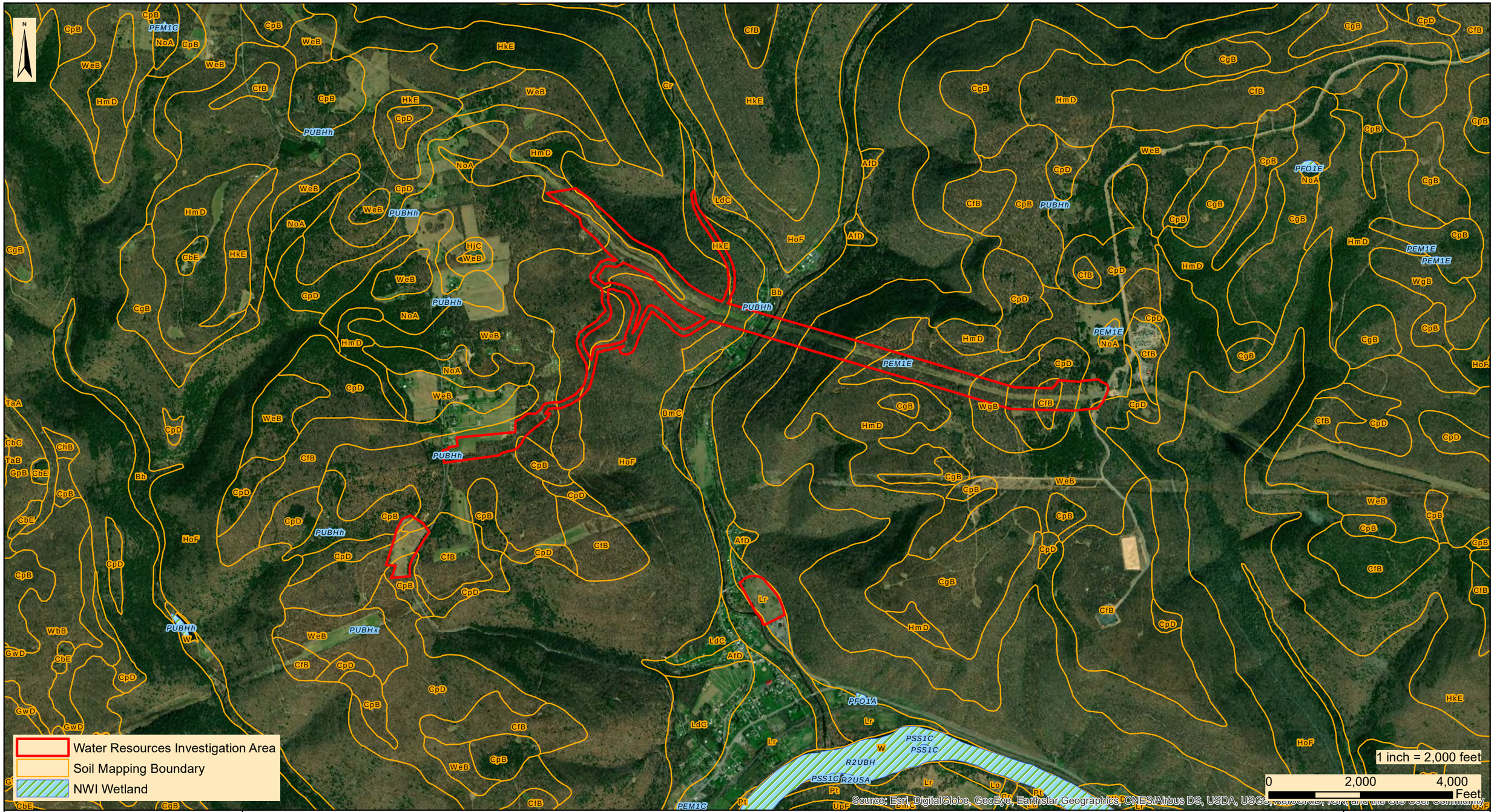


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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### USDA - NRCS SOILS AND NWI WETLANDS MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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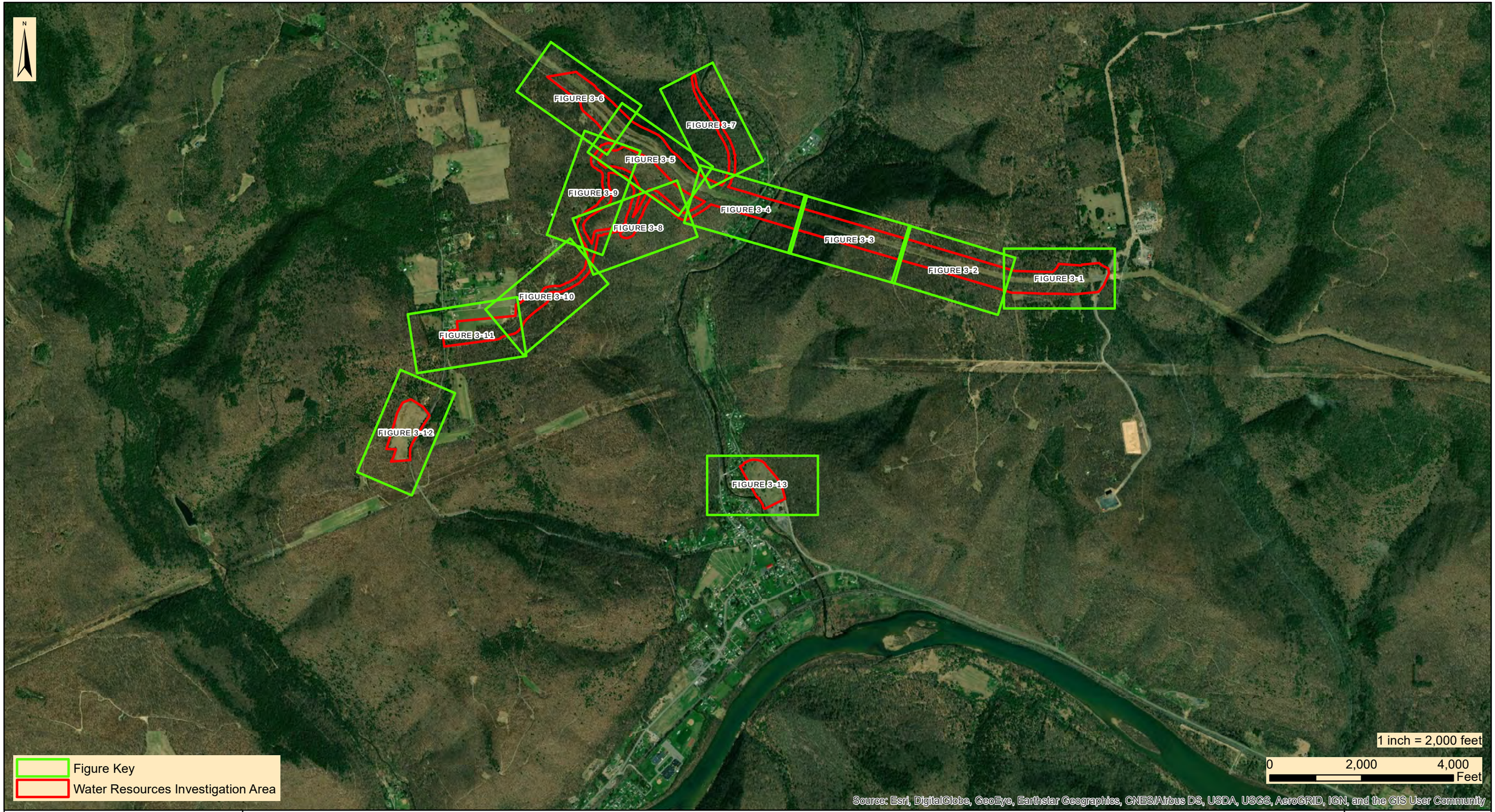


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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WETLAND DELINEATION KEY MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 07/03/19 |
| WHM DRAWING NUMBER: | WILLIAMS201B003 |
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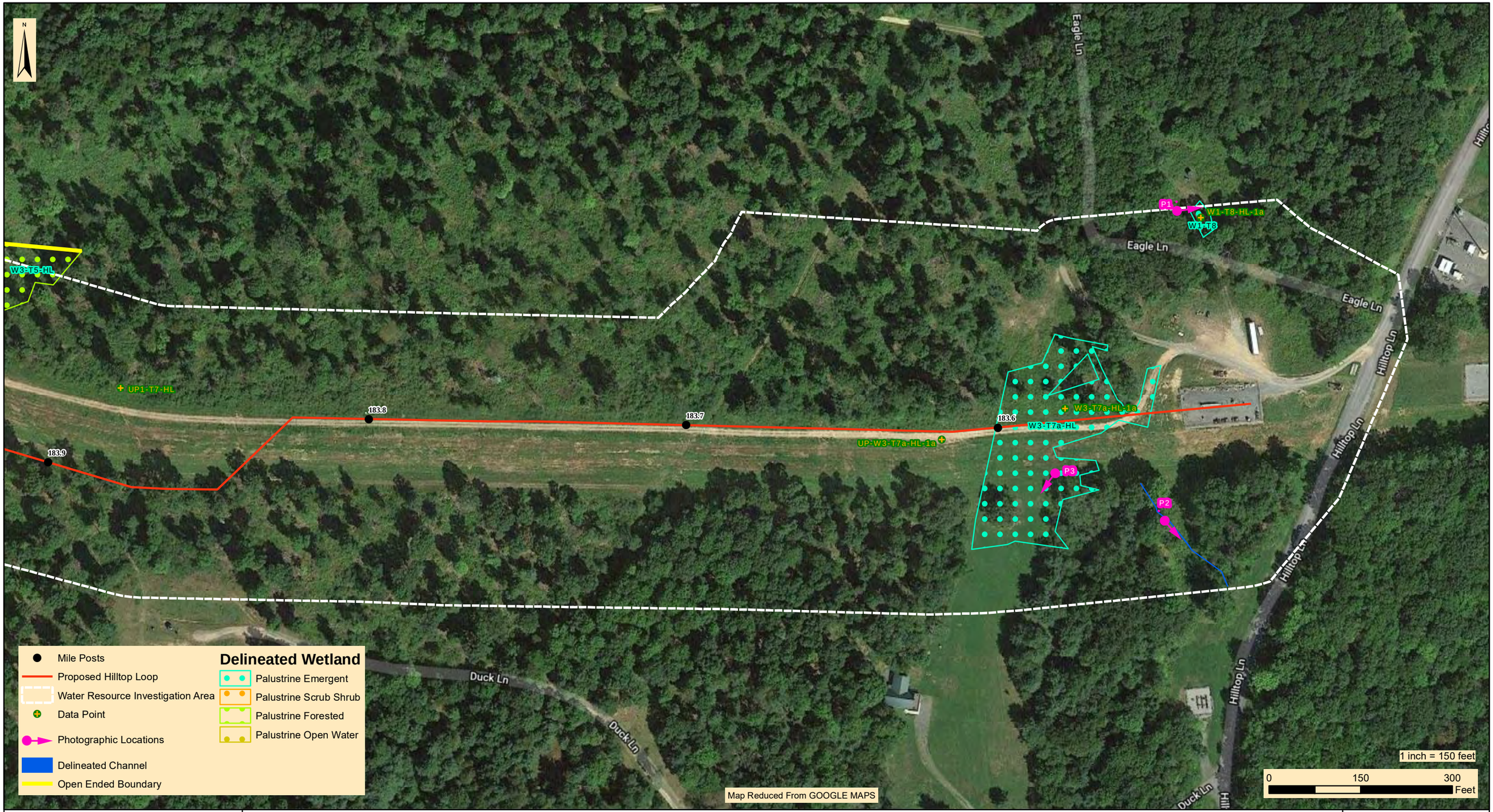
| Figure Number: | 3 |

ATTACHMENT A

WETLAND AND WATER RESOURCE DELINEATION DATA PACKAGE

WATER RESOURCES DELINEATION MAP

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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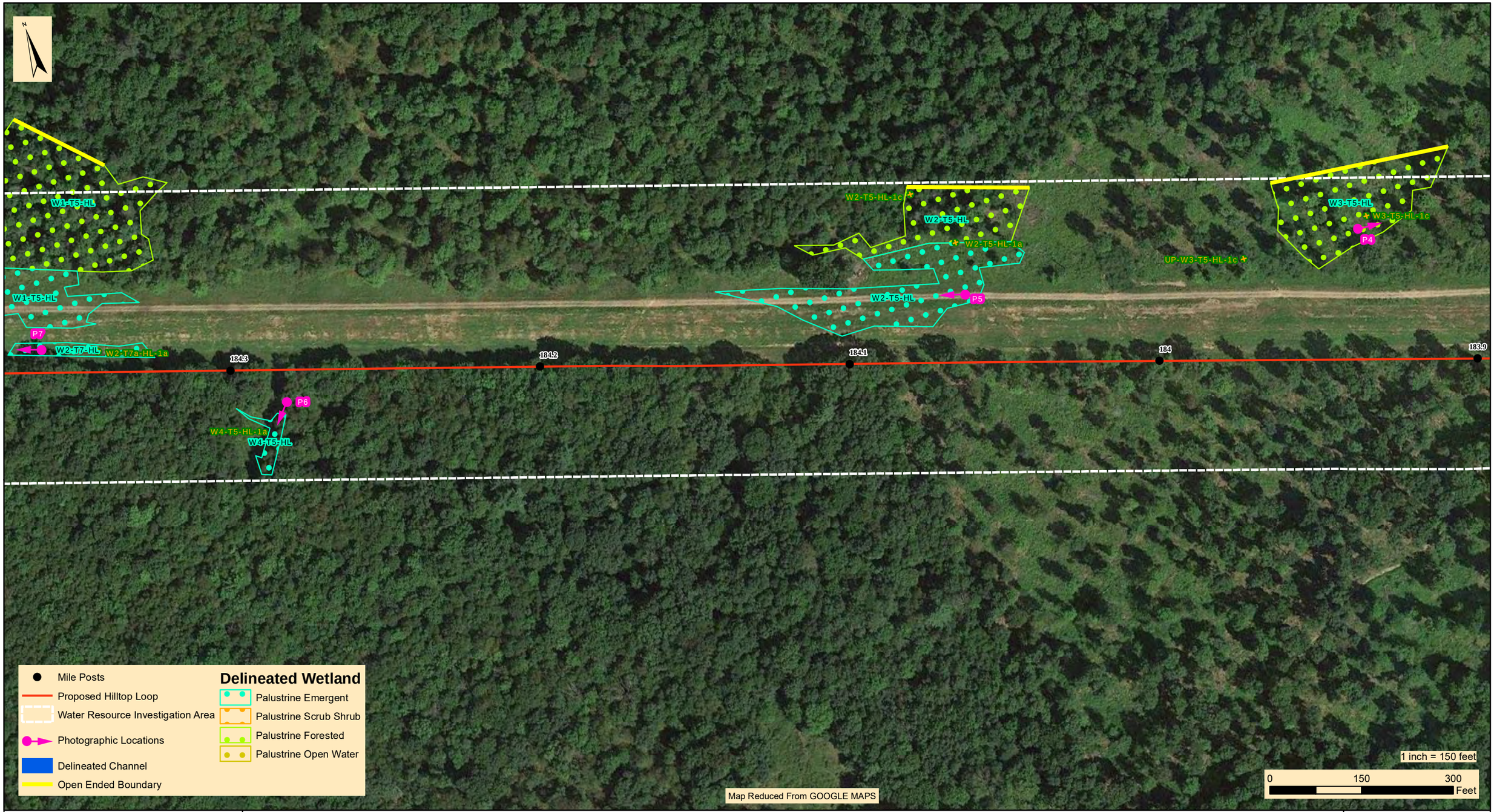


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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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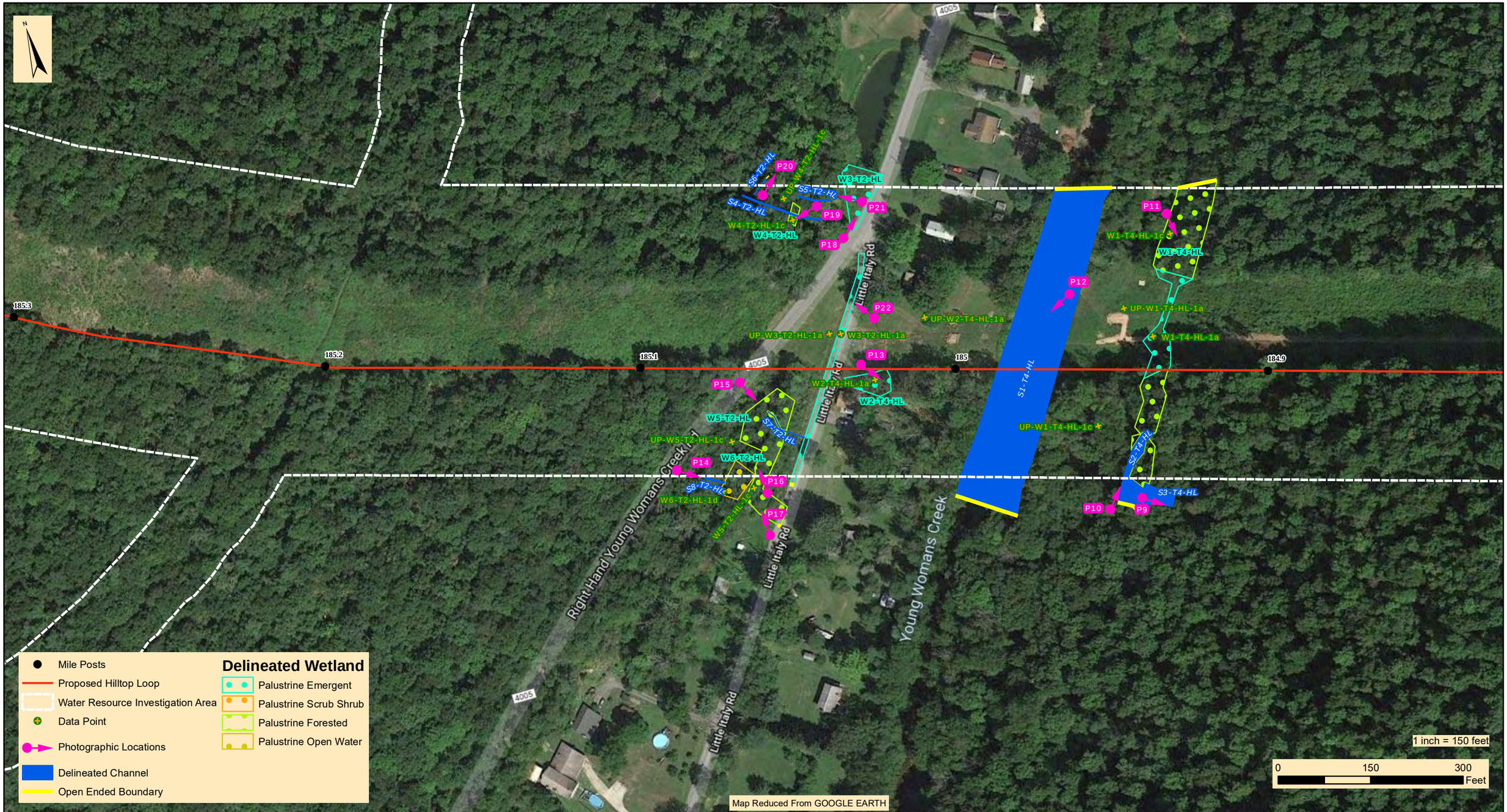


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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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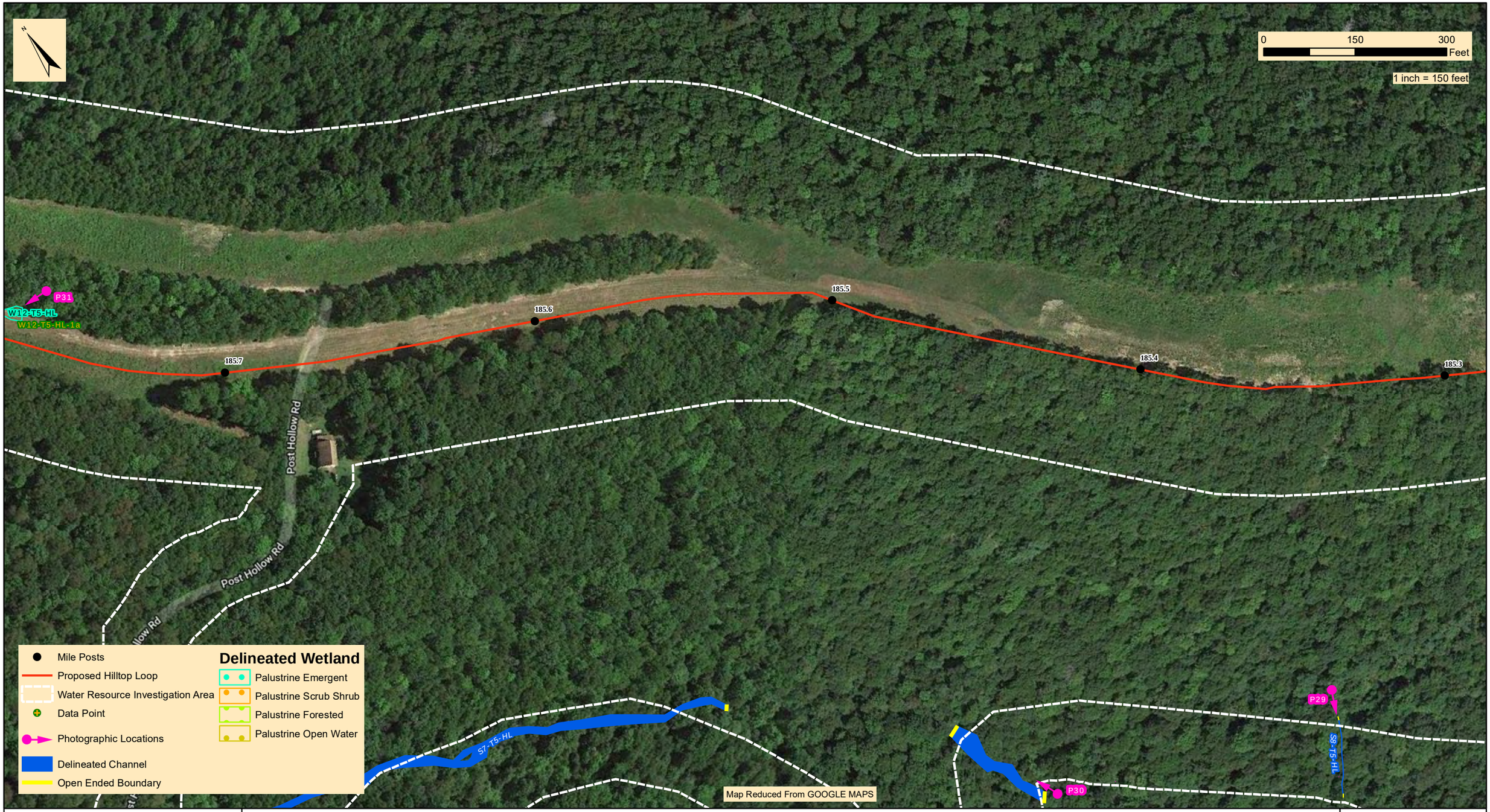


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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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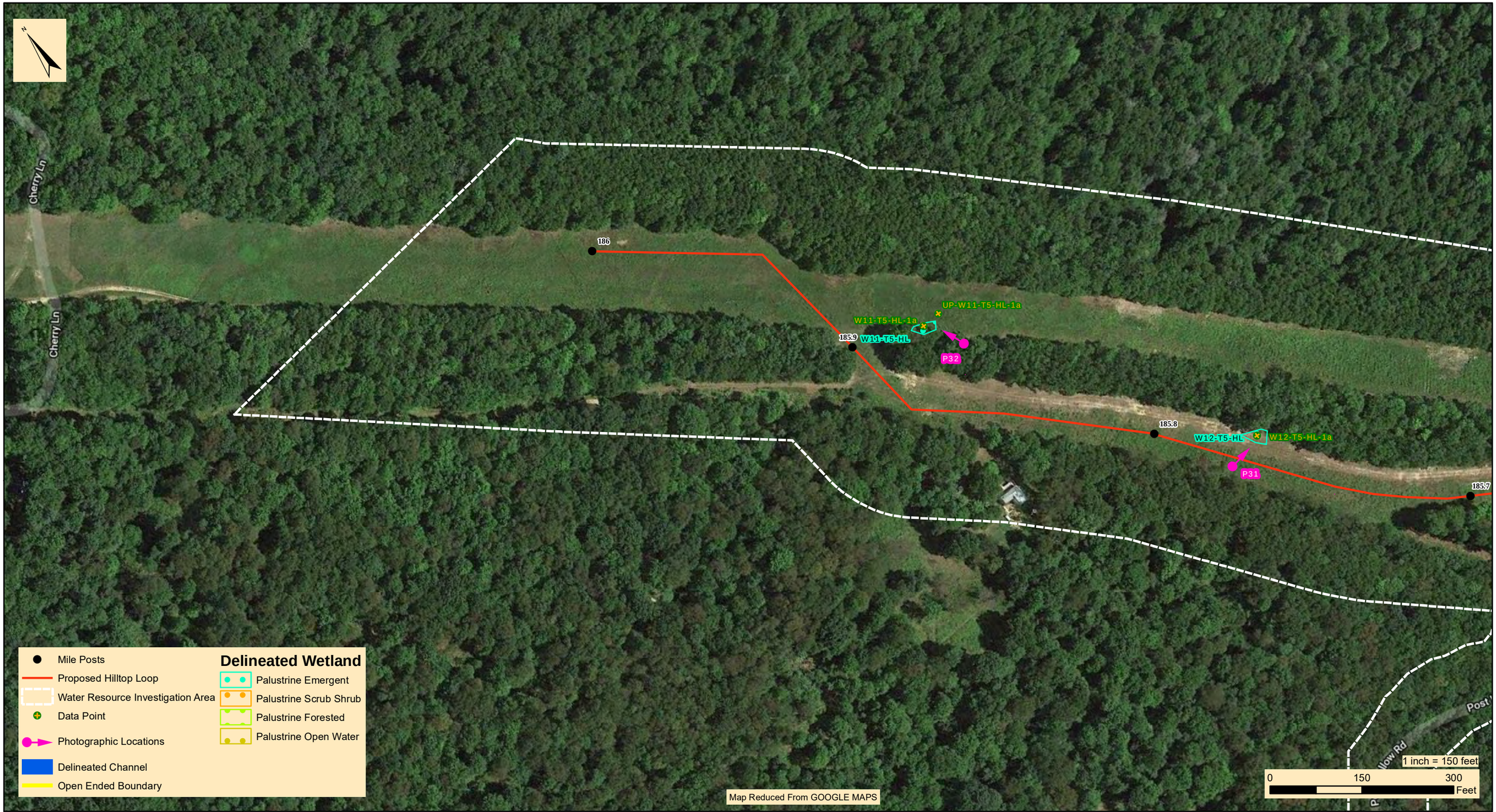


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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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| Drawn By: | BWH |
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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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| Drawn By: | BWH |
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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS201B003_9 |
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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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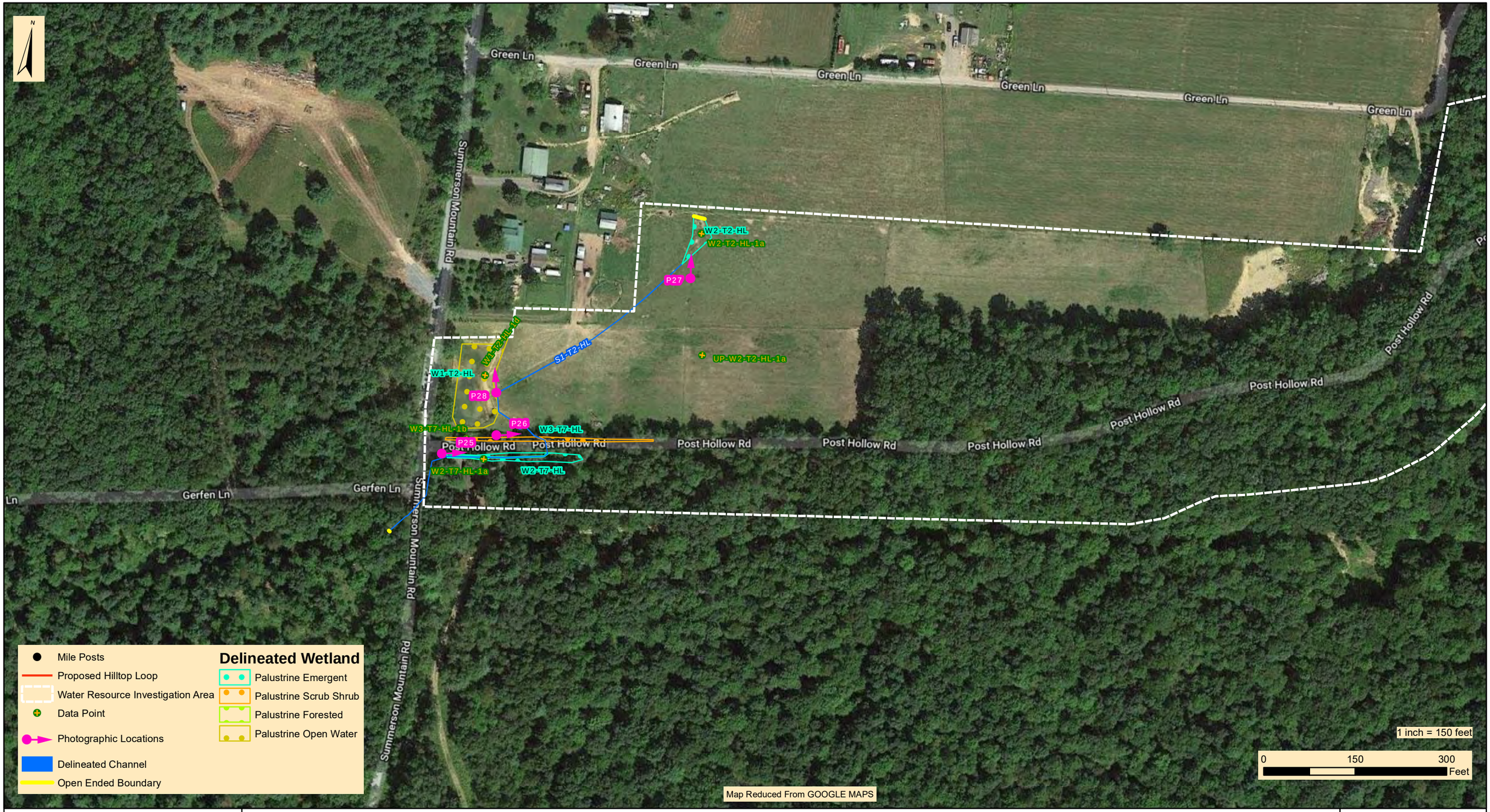


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## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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| Date: | 06/04/19 |
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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS201B003_12 |
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| Figure Number: | 3-12 |

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State College, PA 16803
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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HILLTOP LOOP

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS201B003_13 |
| Drawn By: | BWH |
| Figure Number: | 3-13 |

# PHOTOGRAPHIC DOCUMENTATION

**ID:** Photo 1

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of W1—T8-HL.

**ID:** Photo 2

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of S1—T8-HL.

**ID:** Photo 3

**Date:** 4/8/19

**Taken by:** DW

**Comments:**
The photo shows a view of W3—T7-HL.

**ID:** Photo 4

**Date:** 4/8/19

**Taken by:** DW

**Comments:**
The photo shows a view of W3—T5-HL.

**ID:** Photo 5

**Date:** 4/8/19

**Taken by:** DW

**Comments:**
The photo shows a view of W2—T5-HL.

**ID:** Photo 6

**Date:** 4/8/19

**Taken by:** DW

**Comments:**
The photo shows a view of W4—T5-HL.

**ID:** Photo 7

**Date:** 4/8/19

**Taken by:** DW

**Comments:**
The photo shows a view of W2—T7-HL.

**ID:** Photo 8

**Date:** 4/8/19

**Taken by:** DW

**Comments:**
The photo shows a view of W1—T5-HL.

**ID:** Photo 9

**Date:** 4/4/19

**Taken by:** DW

**Comments:**
The photo shows a view of S3—T4-HL.

**ID:** Photo 10

**Date:** 4/4/19

**Taken by:** DW

**Comments:**
The photo shows a view of S2—T4-HL.

**ID:** Photo 11

**Date:** 4/4/19

**Taken by:** DW

**Comments:**
The photo shows a view of W1—T4-HL.

**ID:** Photo 12

**Date:** 4/4/19

**Taken by:** DW

**Comments:**
The photo shows a view of S1—T4-HL (Young Womans Creek).

**ID:** Photo 13

**Date:** 4/4/19

**Taken by:** CG

**Comments:**
The photo shows a view of W2—T4-HL.

**ID:** Photo 14

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of S8-T2-HL.

**ID:** Photo 15

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of S7-T2-HL.

**ID:** Photo 16

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of W6-T2-HL.

**ID:** Photo 17

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of W5-T2-HL.

**ID:** Photo 18

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of W3-T2-HL.

**ID:** Photo 19

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of W4-T2-HL.

**ID:** Photo 20

**Date:** 11/14/18

**Taken by:** CB

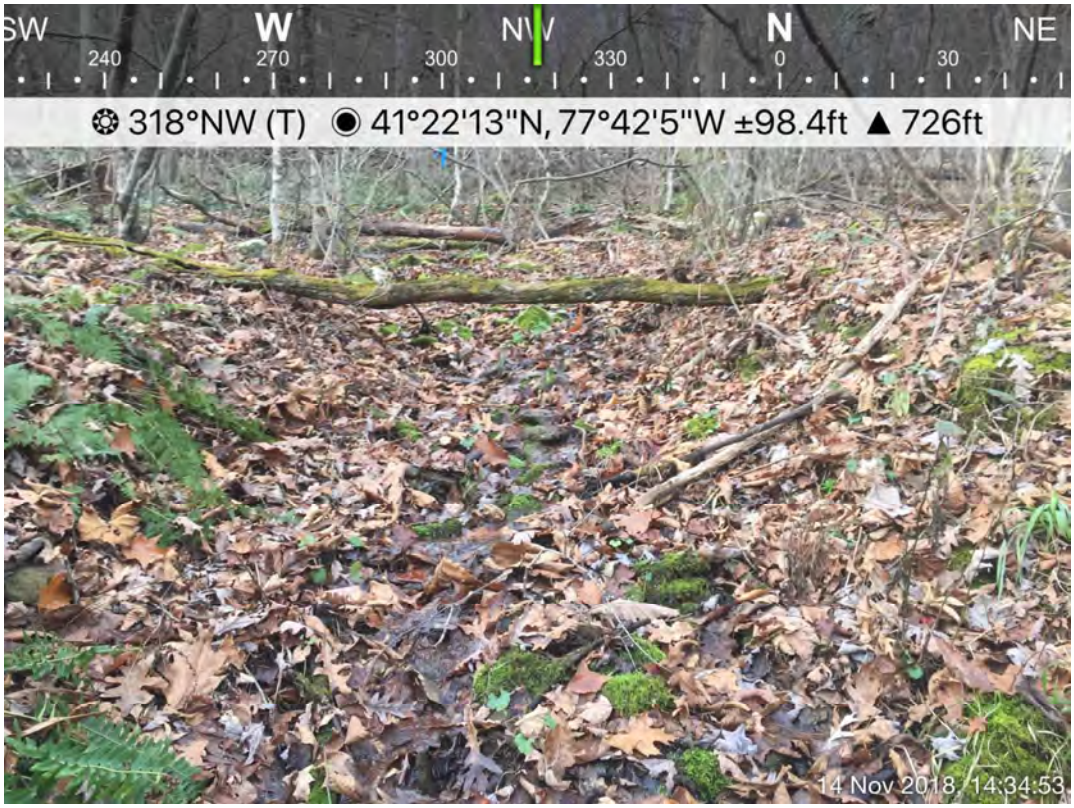
**Comments:**
The photo shows a view of S6-T2-HL.

**ID:** Photo 21

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of S5-T2-HL.




**ID:** Photo 22

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of S4-T2-HL.

**ID:** Photo 23

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of Post Hollow Run S8a-T5-HL.

**ID:** Photo 24

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of stream S9-T5-HL.

**ID:** Photo 25

**Date:** 11/14/18

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W2-T7-HL and stream S2-T2-HL.

**ID:** Photo 26

**Date:** 11/14/18

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W3-T7-HL.

**ID:** Photo 27

**Date:** 11/14/18

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W2-T2-HL.

**ID:** Photo 28

**Date:** 11/14/18

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W1-T2-HL.

**ID:** Photo 29

**Date:** 11/14/18

**Taken by:** CB

**Comments:**
The photo shows a view of wetland S8-T5-HL.

**ID:** Photo 30

**Date:** 11/14/18

**Taken by:** CB

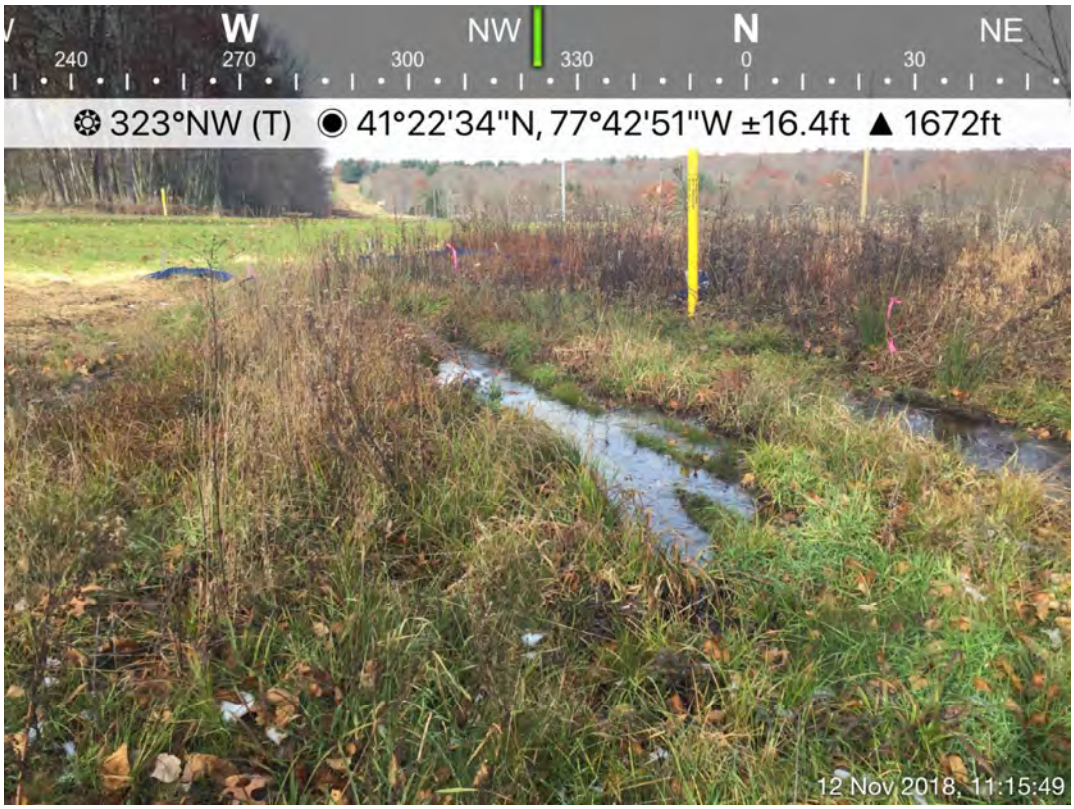
**Comments:**
The photo shows a view of wetland S7-T5-HL.

**ID:** Photo 31

**Date:** 11/12/18

**Taken by:** CB

**Comments:**
The photo shows a view of wetland W12-T5-HL.




**ID:** Photo 32

**Date:** 11/12/18

**Taken by:** CB

**Comments:**
The photo shows a view of wetland W11-T5-HL.

**ID:** Photo 33

**Date:** 4/4/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland S4-T4-HL.

# WETLAND, UPLAND, AND WATERWAYS DATA FORMS

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/30/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T8-HL-1a

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR or MLRA): LRR N Lat.: 41.366602 Long.: -77.674514 Datum: NAD 83

Soil Map Unit Name: Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ____ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ____

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes | **Is the sampled area within a wetland?** Yes X No ____ |
| Hydric soil present? Yes | |
| Wetland hydrology present? Yes | |

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ____ | Depth (inches): | 3" |
| Water table present? | Yes | ____ | No | X | Depth (inches): | ____ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ____ | Depth (inches): | 0" |

**Wetland hydrology present?** Yes X No ____

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T8-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex lurida* | 40 | Yes | OBL |
| 2 *Euthamia graminifolia* | 20 | Yes | FAC |
| 3 *Scirpus cyperinus* | 20 | Yes | FACW |
| 4 *Onoclea sensibilis* | 10 | No | FACW |
| 5 *Juncus effusus* | 10 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

**SOIL** **Sampling Point:** W1-T8-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 90 | 10YR 5/6 | 10 | C | M | Clay Loam | |
| 6-12" | 10YR 4/4 | 95 | 10YR 4/6 | 5 | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 12"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T7a-HL-1a

Investigator(s): CG,CC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.365746 Long.: -77.675318 Datum: NAD 83

Soil Map Unit Name: Wharton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |
| Hydric soil present? Yes | |
| Wetland hydrology present? Yes | |

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes X | No | ___ | Depth (inches): | 5" |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): | 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T7a-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dichanthelium clandestinum* | 25 | Yes | FAC |
| 2 *Microstegium vimineum* | 20 | Yes | FAC |
| 3 *Scirpus cyperinus* | 15 | Yes | FACW |
| 4 *Onoclea sensibilis* | 15 | Yes | FACW |
| 5 *Carex lurida* | 10 | No | OBL |
| 6 *Trifolium repens* | 5 | No | FACU |
| 7 *Juncus effusus* | 5 | No | FACW |
| 8 *Scirpus atrovirens* | 5 | No | OBL |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W3-T7a-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/2 | 95 | 10YR 5/6 | 5 | C | M | CL | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W3-T7a-HL-1a

Investigator(s): CC, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 41.3656 Long.: -77.676061 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam, extremely stony (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | |

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3-T7a-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phleum pratense* | 40 | Yes | FACU |
| 2 *Trifolium repens* | 30 | Yes | FACU |
| 3 *Daucus carota* | 20 | Yes | UPL |
| 4 *Potentilla simplex* | 10 | No | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | | x 3 = | | |
| FACU species | 80 | x 4 = | 400 | |
| UPL species | 20 | x 5 = | 0 | |
| Column totals | 100 | (A) | 400 | (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP-W3-T7a-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/3 | 100 | | | | | Gravel Silt Loam | |
| 8" | | | | | | | | Rock Refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 8"

**Hydric soil present?** Yes ___ No x

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP1-T7-HL

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.365828 Long.: -77.680942 Datum: NAD 83

Soil Map Unit Name Wharton-Cookport complex, very stony (WgB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | **Wetland hydrology present?** | Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP1-T7-HL

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dichanthelium clandestinum* | 40 | Yes | FAC |
| 2 *Microstegium vimineum* | 30 | Yes | FAC |
| 3 *Scirpus cyperinus* | 15 | No | FACW |
| 4 *Rubus allegheniensis* | 10 | No | FACU |
| 5 *Juncus effusus* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | x 1 = | | |
| FACW species | x 2 = | | |
| FAC species | x 3 = | | |
| FACU species | x 4 = | | |
| UPL species | x 5 = | | |
| Column totals | (A) | (B) | |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** UP1-T7-HL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 5/6 | 80 | 10YR 5/8 | 20 | C | M | CL | |
| 12"+ | | | | | | | | Rock |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12"

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T5-HL-1c

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): LRR N Lat.: 41.36627 Long.: -77.681762 Datum: NAD 83

Soil Map Unit Name Wharton-Cookport complex, very stony NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No _____ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No _____

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No _____ |
| Remarks: Recently logged area. | |

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | X Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | X FAC-Neutral Test (D5) |

| | |
|---|---|
| Field Observations:<br>Surface water present? Yes X No _____ Depth (inches): 1"<br>Water table present? Yes X No _____ Depth (inches): 0"<br>Saturation present? Yes X No _____ Depth (inches): 0"<br>(includes capillary fringe) | **Wetland hydrology present?** Yes X No _____ |
| Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | |
| Remarks: | |

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T5-HL-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 60 | Yes | FAC |
| 2 *Scirpus cyperinus* | 40 | Yes | FACW |
| 3 *Juncus effusus* | 10 | No | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W3-T5-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 5/1 | 80 | 7.5YR 5/8 | 20 | C | M | SiL | |
| 12" | | | | | | | | Rock |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W3-T5-HL-1C

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.366242 Long.: -77.682543 Datum: NAD 83

Soil Map Unit Name Wharton-Cookport complex, very stony (WgB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | **Wetland hydrology present?** | Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3-T5-HL-1C

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Quercus alba* | 60 | Yes | FACU |
| 2 *Acer rubrum* | 30 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 90 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Betula alleghaniensis* | 20 | Yes | FAC |
| 2 *Pinus strobus* | 15 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 35 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Poacaea sp.* | 40 | Yes | OBL-UPL |
| 2 *Potentilla pensylvanica* | 10 | No | FACU |
| 3 *Dichanthelium clandestinum* | 5 | No | FAC |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 55 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 60.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** UP-W3-T5-HL-1C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR 4/3 | 100 | | | | | | |
| 0-12" | 10YR 4/5 | 100 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T5-HL1a

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Slope (%):

Subregion (LRR or MLRA): LRR N Lat.: 41.36669 Long.: -77.684155 Datum: NAD 83

Soil Map Unit Name Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsley Vegetated Concave Surface
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes X | No | Depth (inches): 1" | | |
| Water table present? | Yes X | No | Depth (inches): 0" | **Wetland hydrology present?** | Yes X No |
| Saturation present? (includes capillary fringe) | Yes X | No | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T5-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 40 | Yes | FAC |
| 2 *Scirpus cyperinus* | 40 | Yes | FACW |
| 3 *Onoclea sensibilis* | 25 | Yes | FACW |
| 4 *Solidago sp.* | 20 | No | OBL-UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 125 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W2-T5-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR 4/2 | 85 | 7.5YR 5/6 | 15 | C | M | SiL | |
| 3-10" | 10YR 5/1 | 75 | 7.5YR 5/6 | 25 | C | M | SiL | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T5-HL-1c

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): ____

Subregion (LRR or MLRA): LRR N Lat.: 41.366962 Long.: -77.68434 Datum: NAD 83

Soil Map Unit Name: Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ____ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ____

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes | **Is the sampled area within a wetland?** Yes X No ____ |
| Hydric soil present? Yes | |
| Wetland hydrology present? Yes | |

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes X | No ____ | Depth (inches): 1" | | |
| Water table present? | Yes X | No ____ | Depth (inches): 0" | **Wetland hydrology present?** | Yes X No ____ |
| Saturation present? (includes capillary fringe) | Yes X | No ____ | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T5-HL-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 30 | Yes | FAC |
| 2 | *Fraxinus pennsylvanica* | 30 | Yes | FACW |
| 3 | *Betula alleghaniensis* | 20 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 15 | Yes | FAC |
| 2 | *Berberis thunbergii* | 5 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Microstegium vimineum* | 20 | Yes | FAC |
| 2 | *Onoclea sensibilis* | 10 | Yes | FACW |
| 3 | *Solidago sp.* | 10 | Yes | OBL-UPL |
| 4 | *Dichanthelium clandestinum* | 10 | Yes | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 50 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W2-T5-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR 4/2 | 85 | 7.5YR 5/1 | 15 | C | M | | |
| 3-10" | 10YR 5/1 | 75 | 7.5YR 5/6 | 25 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-HL-1a

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.36673 Long.: -77.688394 Datum: NAD 83

Soil Map Unit Name Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: PEM wetland along an access road.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | X Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| X Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| X Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | X FAC-Neutral Test (D5) |

| Field Observations: | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): | 1" |
| Water table present? | Yes | X | No | ___ | Depth (inches): | 0" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 40 | Yes | FAC |
| 2 *Carex sp.* | 20 | Yes | OBL-UPL |
| 3 *Scirpus cyperinus* | 20 | Yes | FACW |
| 4 *Rubus hispidus* | 10 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | x 1 = | | |
| FACW species | x 2 = | | |
| FAC species | x 3 = | | |
| FACU species | x 4 = | | |
| UPL species | x 5 = | | |
| Column totals | (A) | (B) | |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: Carex sp. Was assumed a hydrophyte due to the growth habit within standing standing water.

## SOIL

**Sampling Point:** W4-T5-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/1 | 70 | 7.5YR | 30 | C | M | CL | |
| 8" | | | | | | | | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T7a-HL-1a

Investigator(s): CG,CC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.367359 Long.: -77.689219 Datum: NAD 83

Soil Map Unit Name: Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |
| Hydric soil present? Yes | |
| Wetland hydrology present? Yes | |

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes X | No | ___ | Depth (inches): | 5" |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): | 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T7a-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 70 | Yes | FAC |
| 2 *Dichanthelium clandestinum* | 5 | No | FAC |
| 3 *Scirpus atrovirens* | 5 | No | OBL |
| 4 *Carex sp.* | 5 | No | OBL-UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks:

## SOIL

**Sampling Point:** W2-T7a-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 95 | 10YR 5/8 | 5 | C | M | SiL | |
| 8-12" | 10YR 4/2 | 90 | 10YR 4/6 | 10 | C | M | CL | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T5-HL-1a

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.367874 Long.: -77.690031 Datum: NAD 83

Soil Map Unit Name: Warton silt loam, very stony (WeB) NWI Classification: PEM1E

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic vegetation present? | Yes | **Is the sampled area within a wetland?** Yes X No ___ |
| Hydric soil present? | Yes | |
| Wetland hydrology present? | Yes | |

Remarks:

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | X Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | X FAC-Neutral Test (D5) |

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No ___ | Depth (inches): | 1" |
| Water table present? | Yes | X | No ___ | Depth (inches): | 0" |
| Saturation present? (includes capillary fringe) | Yes | X | No ___ | Depth (inches): | 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T5-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus cyperinus* | 50 | Yes | FACW |
| 2 *Juncus effusus* | 40 | Yes | FACW |
| 3 *Rubus hispidus* | 30 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T5-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 4/1 | 80 | 7.5YR | 20 | C | M | | |
| 10" | | | | | | | | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T5-HL-1c

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR or MLRA): LRR N Lat.: 41.367517 Long.: -77.691056 Datum: NAD 83

Soil Map Unit Name: Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ____ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ____

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ____ |
| Remarks: | |

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | X Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| X Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | X FAC-Neutral Test (D5) |

| | |
|---|---|
| Field Observations:<br>Surface water present? Yes X No ____ Depth (inches): 1"<br>Water table present? Yes X No ____ Depth (inches): 0"<br>Saturation present? Yes X No ____ Depth (inches): 0"<br>(includes capillary fringe) | **Wetland hydrology present?** Yes X No ____ |
| Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | |
| Remarks: | |

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T5-HL-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 50 | Yes | FAC |
| 2 *Populus grandidentata* | 25 | No | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 75 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus cyperinus* | 20 | Yes | FACW |
| 2 *Onoclea sensibilis* | 20 | Yes | FACW |
| 3 *Dichanthelium clandestinum* | 10 | No | FAC |
| 4 *Rubus hispidus* | 10 | No | FACW |
| 5 *Rosa multiflora* | 5 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 65 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T5-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 5/1 | 95 | 7.5YR 5/6 | 5 | C | M | Sandy Loam | |
| 10" | | | | | | | | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T5-HL-1a

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.367577 Long.: -77.689871 Datum: NAD 83

Soil Map Unit Name Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): 0"

Water table present? Yes ___ No X Depth (inches): 0"

Saturation present? Yes ___ No X Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T5-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Potentilla pensylvanica* | 30 | Yes | FACU |
| 2 *Rubus hispidus* | 20 | Yes | FACW |
| 3 *Poacaea sp.* | 15 | No | OBL-UPL |
| 4 *Carex sp.* | 15 | No | OBL-UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 30 | x 3 = | 90 |
| FACU species | 30 | x 4 = | 120 |
| UPL species | | x 5 = | |
| Column totals | 80 (A) | | 250 (B) |

Prevalence Index = B/A = 3.13

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No x

Remarks:

## SOIL

**Sampling Point:** UP-W1-T5-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/4 | 100 | | | | | SiL | |
| 6" | | | | | | | | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 6"

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/08/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T5-HL-1c

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.367605 Long.: -77.691217 Datum: NAD 83

Soil Map Unit Name Warton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): 0"

Water table present? Yes ___ No X Depth (inches): 0"

Saturation present? Yes ___ No X Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T5-HL-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 40 | Yes | FAC |
| 2 | *Quercus rubra* | 40 | Yes | FACU |
| 3 | *Populus grandidentata* | 15 | No | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 95 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Hamamelis virginiana* | 40 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 40 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Dennstaedtia punctilobula* | 50 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 50 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 40 | x 3 = | 120 | |
| FACU species | 145 | x 4 = | 580 | |
| UPL species | | x 5 = | | |
| Column totals | 185 | (A) | 700 | (B) |

Prevalence Index = B/A = 3.78

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP-W1-T5-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 100 | | | | | | |
| 6"+ | | | | | | | | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 6"

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T4-HL-1a

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): LRR N Lat.: 41.369727 Long.: -77.699732 Datum: NAD 83

Soil Map Unit Name: Barbour-Craigsville Complex (Bb) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No _____ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No _____

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes | **Is the sampled area within a wetland?** Yes X No _____ |
| Hydric soil present? Yes | |
| Wetland hydrology present? Yes | |

Remarks:

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | x Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | x FAC-Neutral Test (D5) |

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes _____ | No | X | Depth (inches): | _____ |
| Water table present? | Yes X | No | _____ | Depth (inches): | 0" |
| Saturation present? (includes capillary fringe) | Yes X | No | _____ | Depth (inches): | 0" |

**Wetland hydrology present?** Yes X No _____

Describe recorded data:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T4-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phalaris arundinacea* | 50 | Yes | FACW |
| 2 *Microstegium vimineum* | 40 | Yes | FAC |
| 3 *Solidago sp.* | 10 | No | OBL-UPL |
| 4 *Carex sp.* | 10 | No | OBL-UPL |
| 5 *Euthamia graminifolia* | 10 | No | FAC |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T4-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 4/1 | 85 | 7.5YR 5/6 | 15 | C | M | | |
| 10" | | | | | | | | Rock Refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T4-HL-1c

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%):

Subregion (LRR or MLRA): LRR N Lat.: 41.370141 Long.: -77.699467 Datum: NAD 83

Soil Map Unit Name: Barbour-Craigsville Complex (Bb) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes X | No ___ | Depth (inches): 6" | | |
| Water table present? | Yes X | No ___ | Depth (inches): 0" | **Wetland hydrology present?** | Yes X No ___ |
| Saturation present? (includes capillary fringe) | Yes X | No ___ | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T4-HL-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Carpinus caroliniana* | 40 | Yes | FAC |
| 2 | *Platanus occidentalis* | 20 | Yes | FACW |
| 3 | *Betula alleghaniensis* | 20 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Carpinus caroliniana* | 20 | Yes | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Microstegium vimineum* | 50 | Yes | FAC |
| 2 | *Carex sp.* | 10 | No | OBL-UPL |
| 3 | *Solidago sp.* | 10 | No | OBL-UPL |
| 4 | *Lemna minor* | 10 | No | OBL |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 80 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T4-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 5/1 | 90 | 7.5YR 5/6 | 10 | C | M | Gravelly Silt Loam | |
| 10" | | | | | | | | Rock Refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T4-HL-1a

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 41.369886 Long.: -77.69985 Datum: NAD 83

Soil Map Unit Name: Barbour-Craigsville Complex (Bb) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | |

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T4-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Poacaea sp.* | 40 | Yes | OBL-UPL |
| 2 *Trifolium repens* | 30 | Yes | FACU |
| 3 *Glechoma hederacea* | 20 | Yes | FACU |
| 4 *Setaria sp.* | 10 | No | FAC |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 50 | x 3 = | 150 | |
| FACU species | 50 | x 4 = | 200 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 100 | (A) | 350 | (B) |

Prevalence Index = B/A = 3.50

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W1-T4-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/3 | 85 | 7.5YR 5/6 | 15 | C | M | Cobbley Silt Loam | |
| 8" | | | | | | | | Rock Refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 8"

**Hydric soil present?** Yes ___ No x

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W1-T4-1c

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 41.369403 Long.: -77.700187 Datum: NAD 83

Soil Map Unit Name Barbour-Craigsville Complex (Bb) NWI Classification:

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | **Wetland hydrology present?** | Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T4-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Juglans nigra* | 60 | Yes | FACU |
| 2 | *Carpinus caroliniana* | 35 | Yes | FAC |
| 3 | *Betula lenta* | 25 | No | FACU |
| 4 | *Fraxinus americana* | 10 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 130 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Lindera benzoin* | 20 | Yes | FAC |
| 2 | *Acer pensylvanicum* | 10 | Yes | FACU |
| 3 | *Berberis thunbergii* | 10 | Yes | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 40 | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Dryopteris marginalis* | 20 | Yes | FACU |
| 2 | *Carex sp.* | 10 | Yes | OBL-UPL |
| 3 | *Grass sp.* | 10 | Yes | OBL-UPL |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 40 | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Smilax auriculata* | 5 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 5 | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 9 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 44.44% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 75 | x 3 = | 225 | |
| FACU species | 140 | x 4 = | 560 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 215 | (A) | 785 | (B) |

Prevalence Index = B/A = 3.65

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP-W1-T4-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 3/3 | 100 | | | | | Sandy loam | |
| 6-12" | 10YR 5/6 | 100 | | | | | Sandy clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T4--HL-1a

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR or MLRA): LRR N Lat.: 41.369884 Long.: -77.701378 Datum: NAD 83

Soil Map Unit Name: Barbour-Craigsville Complex (Bb) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: Depressional wetland behind a garage.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- x FAC-Neutral Test (D5)

Field Observations:

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | 0" |
| Water table present? | Yes | X | No | ___ | Depth (inches): | 0" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 3" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T4-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Lythrum salicaria* | 30 | Yes | FACW |
| 2 *Carex sp.* | 20 | Yes | OBL-UPL |
| 3 *Poaceae sp.* | 20 | Yes | OBL-UPL |
| 4 *Persicaria sagittata* | 20 | Yes | OBL |
| 5 *Juncus effusus* | 20 | Yes | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species ____ x 1 = ____

FACW species ____ x 2 = ____

FAC species ____ x 3 = ____

FACU species ____ x 4 = ____

UPL species ____ x 5 = ____

Column totals ____ (A) ____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes x No ____

Remarks: 20% bare ground

## SOIL

**Sampling Point:** W2-T4-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/1 | 80 | 7.5YR 5/6 | 20 | C | M | SiL | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2-T4-HL-1a

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR or MLRA): LRR N Lat.: 41.370087 Long.: -77.700998 Datum: NAD 83

Soil Map Unit Name: Barbour-Craigsville Complex (Bb) NWI Classification:

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? N<br>Hydric soil present? Y<br>Wetland hydrology present? N | **Is the sampled area within a wetland?** Yes ___ No x |

Remarks: UP-W2-T4-HL-1a is trending towards a wetland due to past disturbance and compaction within the ROW

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | |

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** JP-W2-T4-HL-1

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Trifolium repens* | 30 | Yes | FACU |
| 2 *Glechoma hederacea* | 20 | Yes | FACU |
| 3 *Grass sp.* | 20 | Yes | OBL-UPL |
| 4 *Carex sp.* | 10 | No | OBL-UPL |
| 5 *Lotus corniculatus* | 10 | No | FACU |
| 6 *Hesperis matronalis* | 10 | No | FACU |
| 7 *Juncus effusus* | 10 | No | FACW |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | 10 | x 2 = | 20 | |
| FAC species | 30 | x 3 = | 90 | |
| FACU species | 70 | x 4 = | 280 | |
| UPL species | | x 5 = | | |
| Column totals | 110 | (A) | 390 | (B) |

Prevalence Index = B/A = 3.60

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No x

Remarks: Trending to wetland

## SOIL

**Sampling Point:** UP-W2-T4-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/2 | 85 | 7.5YR | 15 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T2-HL-1a

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.370124 Long.: -77.701516 Datum: NAD 83

Soil Map Unit Name Barbour-Craigsville complex (Bb) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W3-T2-HL-1a is located within a PEM wetland that located along a road in a ditch It recieves hydrology from S7-T2-HL.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| x Saturation (A3) | x Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 6-8"

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T2-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Glyceria striata* | 50 | Yes | OBL |
| 2 *Nasturtium officinale* | 10 | Yes | OBL |
| 3 *Juncus effusus* | 10 | Yes | FACW |
| 4 *Carex lurida* | 10 | Yes | OBL |
| 5 *Scirpus Cyperinus* | 10 | Yes | FACW |
| 6 *Scirpus atrovirens* | 10 | Yes | OBL |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | x 1 = | | |
| FACW species | x 2 = | | |
| FAC species | x 3 = | | |
| FACU species | x 4 = | | |
| UPL species | x 5 = | | |
| Column totals | (A) | (B) | |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

x 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T2-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 90 | 10YR 5/6 | 10 | C | M | loam | |
| 8" | 10YR4/4 | 85 | 10YR 5/6 | 15 | C | M | loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W3-T2-HL-1a

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): none Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.370131 Long.: -77.701567 Datum: NAD 83

Soil Map Unit Name: Barbour-Craigsville complex (Bb) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W3-T2-HL-1a is located along an existing pipeline ROW wihtin a upland area adjacent to, and east of W3-T2-HL.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3-T2-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dactylis glomerata* | 80 | Yes | FACU |
| 2 *Lolium perenne* | 20 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 100 | x 4 = | 400 |
| UPL species | | x 5 = | |
| Column totals | 100 (A) | | 400 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W3-T2-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 5/6 | 100 | | | | | silt loam | |
| 6-12" | 10YR4/8 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W5-T2-HL-1c

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.369563 Long.: -77.702245 Datum: NAD 83

Soil Map Unit Name Hazleton channery sandy loam (HkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W5-T2-HL-1c is located within a PFO wetland. This wetland is hydrologically connected to W3-T2-HL via S7-T2. This wetland lies adjacent to W6-T2-HL.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | X Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| X Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| X Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 1"

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W5-T2-HL-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carpinus caroliniana* | 10 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 10 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Ilex verticillata* | 15 | Yes | FACW |
| 2 *Alnus serrulata* | 10 | Yes | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 25 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex sp.* | 25 | Yes | OBL-FACU |
| 2 *Nasturtium officinale* | 5 | No | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 30 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W5-T2-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 98 | 10YR 5/6 | 2 | C | M | Clay loam | |
| 8" | 10YR4/4 | 90 | 10YR 5/6 | 10 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W5-T2-HL-1c

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): none Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.369790 Long.: -77.702296 Datum: NAD 83

Soil Map Unit Name: Barbour-Craigsville complex (Bb) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks:UP-W5-T2-HL-1c is located between two existing roads, slightly north of W5-T2-HL and northeast of W6-T2-HL.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W5-T2-HL-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Fraxinus americana* | 5 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 5 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Poa pratensis* | 5 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 5 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | | x 3 = | | |
| FACU species | 10 | x 4 = | 40 | |
| UPL species | | x 5 = | | |
| Column totals | 10 | (A) | 40 | (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W5-T2-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR3/2 | 100 | | | | | silt loam | |
| 2-8" | 10YR4/4 | 100 | | | | | silt loam | |
| 8-12" | 10YR5/4 | 100 | | | | | silt loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W6-T2-HL-1d

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.369588 Long.: -77.702425 Datum: NAD 83

Soil Map Unit Name Hazleton channery sandy loam (HkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W6-T2-1d is located within a POW wetland formed from seeps at the bottom of a hill. This wetland abuts S8-T2.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| x Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes X No ___ Depth (inches): Unknown*

Water table present? Yes X No ___ Depth (inches): Surface

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:*Depth could not be estimated due to algal growth

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W6-T2-HL-1d

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 30 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across all Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | _____ | x 1 = | _____ |
| FACW species | _____ | x 2 = | _____ |
| FAC species | _____ | x 3 = | _____ |
| FACU species | _____ | x 4 = | _____ |
| UPL species | _____ | x 5 = | _____ |
| Column totals | _____ (A) | | _____ (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

X 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X* No _____

Remarks: (Include photo numbers here or on a separate sheet):
*Pond is covered with green algae through which no vegetation could be seen. It appears, however, that this wetland is capable of supporting hydrophytic vegetation.

## SOIL

**Sampling Point:** W6-T2-HL-1d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR 4/1 | 100 | | | | | silt loam | organic |
| 3-8" | 10YR4/2 | 95 | 10YR 5/6 | 5 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T2-HL-1c

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.370682 Long.: -77.701571 Datum: NAD 83

Soil Map Unit Name Hazleton channery sandy loam (HkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W4-T2-HL-1c is located within a PFO wetland. S4-T2-HL flows throughout the wetland. S5-T2-HL converges with S4-T2-HL wihtin the wetland.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| x Saturation (A3) | x Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| X Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 6-8"

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes x No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T2-HL-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Carpinus caroliniana* | 10 | Yes | FAC |
| 2 | *Acer rubrum* | 10 | Yes | FAC |
| 3 | *Fraxinus pennsylvanica* | 5 | No | FACW |
| 4 | *Quercus rubra* | 5 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 30 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Hamamelis virginiana* | 5 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 5 | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Carex folliculata* | 70 | Yes | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 70 | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T2-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 98 | 10YR 5/6 | 2 | C | M | clay loam | |
| 8" | 10YR4/4 | 95 | 10YR 5/6 | 5 | C | M | clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Primary soil indicator is a depleted matrix.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T2-HL-1c

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): none Slope (%): 3-5%

Subregion (LRR or MLRA): LRR N Lat.: 41.370765 Long.: -77.701605 Datum: NAD 83

Soil Map Unit Name Hazleton channery sandy loam (HkE) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W4-T2-HL-1c is located in an upland area adjacent to an exsiting pipeline ROW, north of W4-T2-HL and adajcent to S4-T2-HL.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| ___ Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** | Yes ___ No X |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | | |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T2-HL-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Quercus montana* | 40 | Yes | UPL |
| 2 *Fagus grandifolia* | 20 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 60 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dennstaedtia punctilobula* | 5 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 5 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | | x 3 = | | |
| FACU species | 25 | x 4 = | 100 | |
| UPL species | 40 | x 5 = | 200 | |
| Column totals | 65 | (A) | 300 | (B) |

Prevalence Index = B/A = 4.62

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W4-T2-HL-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | 10YR4/1 | 100 | | | | | silt loam | |
| 1-6" | 10YR4/4 | 100 | | | | | silt loam | |
| 6-8" | 10YR5/6 | 100 | | | | | silt loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/12/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W12-T5-HL-1a

Investigator(s): DW, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.375135 Long.: -77.712957 Datum: NAD 83

Soil Map Unit Name: Wharton silt loam (WeB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W12-T5-1a is located along an existing access road within an isolated PEM wetland.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): | 3" |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W12-T5-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 25 | Yes | FACW |
| 2 *Scirpus atrovirens* | 20 | Yes | OBL |
| 3 *Carex lurida* | 20 | Yes | OBL |
| 4 *Juncus tenuis* | 10 | No | FAC |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 75 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

x 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W12-T5-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/1 | 95 | 7.5YR 5/6 | 5 | C | M | Sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 6"

**Hydric soil present?** Yes x No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hilltop City/County: Clinton County Sampling Date: 11/12/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W11-T5-HL-1a

Investigator(s): DW, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.376408 Long.: -77.714198 Datum: NAD 83

Soil Map Unit Name Cookport channery loam, extremely stony (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W11-T5-1a located along an exisitng access road within an isolated PEM wetland.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): | 4" |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W11-T5-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus atrovirens* | 30 | Yes | OBL |
| 2 *Persicaria pensylvanica* | 20 | Yes | FACW |
| 3 *Dichanthelium clandestinum* | 20 | Yes | FAC |
| 4 *Persicaria sagittata* | 10 | No | OBL |
| 5 *Juncus effusus* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W11-T5-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/1 | 95 | 7.5YR 5/6 | 5 | C | M | Sandy loam | bedrock |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 6"

**Hydric soil present?** Yes x No ___

Remarks: Primary soil indicator is a depleted matrix.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/12/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W11-T5-HL-1a

Investigator(s): DW, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.376404 Long.: -77.714091 Datum: NAD 83

Soil Map Unit Name Cookport channery loam (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W11-T5-1a is located within an upland area along an existing access road adjacent to W11-T5.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W11-T5-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Rubus hispidus* | 40 | Yes | FACW |
| 2 *Vaccinium angustifolium* | 40 | Yes | FACU |
| 3 *Solidago canadensis* | 10 | No | FACU |
| 4 *Dichanthelium clandestinum* | 10 | No | FAC |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | 40 | x 2 = | 80 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 50 | x 4 = | 200 |
| UPL species | | x 5 = | |
| Column totals | 100 (A) | | 310 (B) |

Prevalence Index = B/A = 3.10

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W11-T5-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 6"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T2-HL-1d

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.362306 Long.: -77.725855 Datum: NAD 83

Soil Map Unit Name: Wharton silt loam (WeB) NWI Classification: PUBHh

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W1-T2-1d is located within a POW wetland in the middle of a horse pasture. Water enters the wetland from S1-T2 and an existing underground pipe. This wetland abuts S2-T2 and is hydrologically connected to W2-T2 via S1-T2.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| x Saturation (A3) | x Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): ≤ 24" |
| Water table present? | Yes | ___ | No | x | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | x | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T2-HL-1d

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Typha latifolia* | 20 | Yes | OBL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 20 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

x 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T2-HL-1d

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/2 | 85 | 10YR 5/6 | 15 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Soils eroded due to pasture animals.

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T2-HL-1a

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): flat field Local relief (concave, convex, none): none Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.363116 Long.: -77.724673 Datum: NAD 83

Soil Map Unit Name Wharton silt loam (WeB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T2-1a is located withina PEM wetland found in the middle of an active pasture. The wetland is springfed and abuts S1-T2.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | x Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): | 1-3 |
| Water table present? | Yes | X | No | ___ | Depth (inches): | Surface |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T2-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phalaris arundinacea* | 80 | Yes | FACW |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

x 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T2-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/1 | 100 | | | | | silt loam | |
| 8-14" | 10YR4/2 | 95 | 10YR 5/6 | 5 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks: Soils disturbed from animal use within the pasture.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hilltop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W2-T2-HL-1a

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): flat field Local relief (concave, convex, none): none Slope (%): 0-3%

Subregion (LRR or MLRA): LRR N Lat.: 41.363133 Long.: -77.724545 Datum: NAD 83

Soil Map Unit Name: Wharton silt loam (WeB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: UP-W2-T2-1a is located within an upland area within an active horse pasture east of W2-T2

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2-T2-HL-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Poa pratensis* | 40 | Yes | FACU |
| 2 *Lepidium virginicum* | 5 | No | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 45 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 45 | x 4 = | 180 |
| UPL species | | x 5 = | |
| Column totals | 45 (A) | | 180 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W2-T2-HL-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/4 | 100 | | | | | silt loam | |
| 6-12" | 10YR5/6 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks: Soils slightly compacted due to pasture animals

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hilltop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T7-HL-1b

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.36204 Long.: -77.725849 Datum: NAD 83

Soil Map Unit Name Wharton silt loam (WeB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W3-T7-1b is a PSS wetland located in a ditch along a road..

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): <1" |
| Water table present? | Yes | X | No | ___ | Depth (inches): Surface |
| Saturation present? (includes capillary fringe) | Yes | x | No | ___ | Depth (inches): Surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T7-HL-1b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Salix nigra* | 10 | Yes | OBL |
| 2 *Acer rubrum* | 10 | Yes | FAC |
| 3 *Cornus amomum* | 5 | No | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 25 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex lurida* | 25 | Yes | OBL |
| 2 *Onoclea sensibilis* | 10 | Yes | FACW |
| 3 *Lysimachia ciliata* | 10 | Yes | FACW |
| 4 *Typha latifolia* | 5 | No | OBL |
| 5 *Solidago rugosa* | 5 | No | FAC |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 55 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | x 1 = | | |
| FACW species | x 2 = | | |
| FAC species | x 3 = | | |
| FACU species | x 4 = | | |
| UPL species | x 5 = | | |
| Column totals | (A) | (B) | |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T7-HL-1b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14"+ | 10YR 4/2 | 90 | 10YR 5/6 | 10 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hilltop City/County: Clinton County Sampling Date: 11/14/18

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T7-1a

Investigator(s): PF, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.361964 Long.: -77.725729 Datum: NAD 83

Soil Map Unit Name Wharton silt loam (WeB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes x No ___ |

Remarks: W2-T7-1a is a PEM wetland located in a ditch along a road.

## HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| x Saturation (A3) | x Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): | <1" |
| Water table present? | Yes | X | No | ___ | Depth (inches): | Surface |
| Saturation present? (includes capillary fringe) | Yes | x | No | ___ | Depth (inches): | Surface |

**Wetland hydrology present?** Yes x No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T7-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Populus tremuloides* | 5 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 5 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Leersia oryzoides* | 35 | Yes | OBL |
| 2 *Solidago rugosa* | 10 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 45 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet) Half of the wetland is bare soil.

## SOIL

**Sampling Point:** W2-T7-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR4/2 | 95 | 10YR 5/6 | 5 | C | M | silt loam | |
| 6-12" | 10YR4/2 | 98 | 10YR 5/6 | 2 | C | M | gravelly clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
x Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes x No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/30/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP2-T4-HL

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.35553 Long.: -77.729504 Datum: NAD 83

Soil Map Unit Name Cookport channery loam, extremely stony (CpB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): 0"

Water table present? Yes ___ No X Depth (inches): 0"

Saturation present? Yes ___ No X Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP2-T4-HL

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Poacaea sp.* | 50 | Yes | OBL-UPL |
| 2 *Vaccinium angustifolium* | 30 | Yes | FACU |
| 3 *Apocynum cannabinum* | 30 | Yes | FACU |
| 4 *Solidago sp* | 20 | No | OBL-UPL |
| 5 *Securigera varia* | 10 | No | UPL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 140 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 70 | x 3 = | 210 |
| FACU species | 60 | x 4 = | 240 |
| UPL species | 10 | x 5 = | 50 |
| Column totals | 140 (A) | | 500 (B) |

Prevalence Index = B/A = 3.57

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP2-T4-HL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/3 | 100 | | | | | Loam | |
| 8-14" | 10YR 5/6 | 100 | | | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/30/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP3-T4-HL

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.357854 Long.: -77.728996 Datum: NAD 83

Soil Map Unit Name Wharton silt loam, very stony (WeB) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | |

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP3-T4-HL

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Zea mays* | 100 | Yes | FACU |
| 2 *Trifoilum repens* | 5 | No | FACU |
| 3 *Potentilla simplex* | 5 | No | FACU |
| 4 *Cardamine hirsuta* | 2 | No | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 112 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 112 | x 4 = | 240 |
| UPL species | | x 5 = | |
| Column totals | 112 (A) | | 448 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP3-T4-HL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/3 | 100 | | | | | Loam | |
| 6-14" | 10YR 5/4 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP1-T4-HL

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0-8

Subregion (LRR or MLRA): LRR N Lat.: 41.353255 Long.: -77.700779 Datum: NAD 83

Soil Map Unit Name: Linden silt loam, rarely flooded (Lr) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | **Wetland hydrology present?** | Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP1-T4-HL

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Robinia pseudoacacia* | 70 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 70 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Robinia pseudoacacia* | 30 | Yes | FACU |
| 2 *Rosa multiflora* | 20 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 50 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 50 | Yes | FAC |
| 2 *Poacaea sp.* | 30 | Yes | OBL-UPL |
| 3 *Alliaria petiolata* | 20 | No | FACU |
| 4 *Rosa multiflora* | 20 | No | FACU |
| 5 *Glechoma hederacea* | 15 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 40.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 80 | x 3 = | 240 |
| FACU species | 175 | x 4 = | 700 |
| UPL species | | x 5 = | |
| Column totals | 255 (A) | | 940 (B) |

Prevalence Index = B/A = 3.69

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

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**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP1-T4-HL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 7.5YR 4/3 | 100 | | | | | Gravelly Silt Loam | |
| 8"+ | | | | | | | | Rock |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
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- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8"

**Hydric soil present?** Yes ___ No X

Remarks:

**STREAM ID:** S1-T8-HL

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/30/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, KC, CG

**CHARACTERISTICS**

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** Northwest to southeast

**Width (ft) (water's edge to water's edge):**

**Width (ft) (bank to bank):** 2'
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☑ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Eastern Hemlock, Red Maple

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**
- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

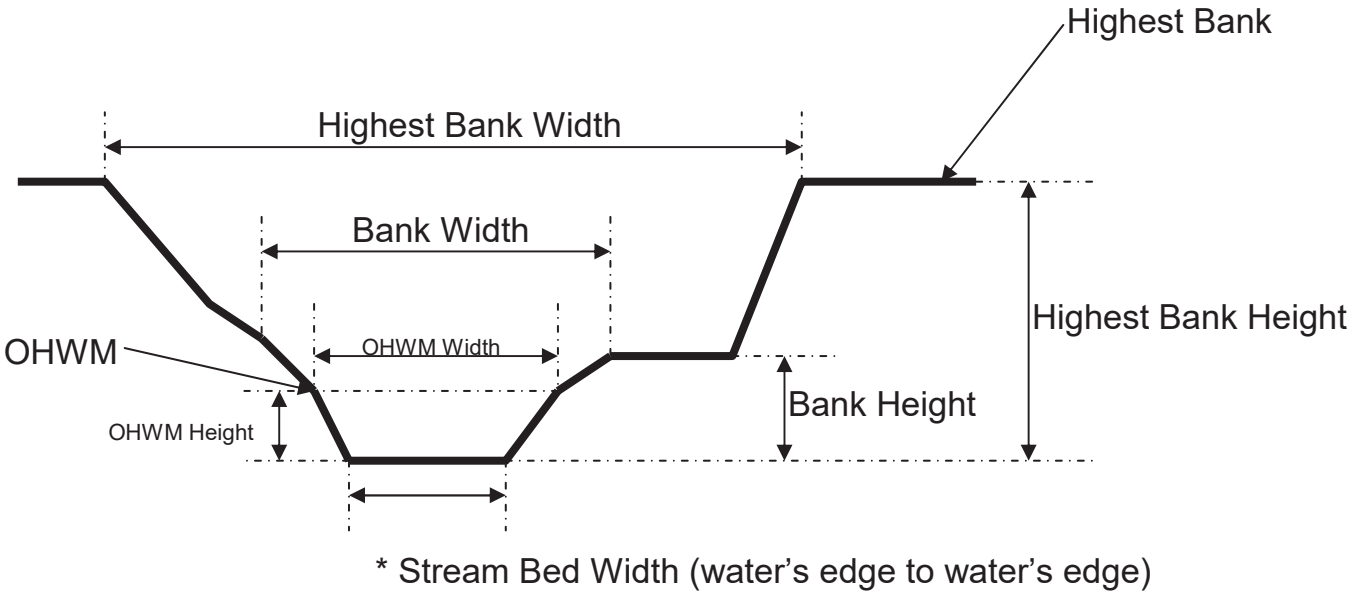
**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S1-T8-HL is an ephemeral channel that is 2 ft wide. No water was present during the survey.




*Stream bed width is variable

**DEFINITIONS:**

**Perennial:** has flowing water year-round during a typical year.

**Intermittent:** has flowing water during certain times of the year, when groundwater provides water for stream flow.

**Ephemeral:** has flowing water only during, and for a short duration after, precipitation events in a typical year.

**Run**: A reach of stream characterized by fast flowing low turbulence water.

**Riffle:** A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.

**Pool:** A reach of stream that is characterized by deep low velocity water and a smooth surface.

**STREAM ID: SS** S2-T4-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton County

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/04/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW/CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** north to south

**Width (ft) (water's edge to water's edge):** 2 to 3

**Width (ft) (bank to bank):** 2 to 3
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 0.5 ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 0.5 ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 1'
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Yellow birch, Black birch, Muscle wood, American Beech, Hemlock, Red maple.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Flows through W1-T4

**STREAM ID: SS** S3-T4-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton County

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/04/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW/CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** east to west

**Width (ft) (water's edge to water's edge):**

**Width (ft) (bank to bank):**
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Boulder, Wood

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 1'
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Ash, Hemlock, American beech, River Birch, Sugar maple.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Wide channel at base of hollow ties to T4-S2, open ended

**STREAM ID: SS** S1-T4-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton County

**Stream Name:** ☐ UNNAMED ☑ NAMED: Young Women's Creek

**Date:** 04/04/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW/CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** northeast to southwest

**Width (ft) (water's edge to water's edge):** 80

**Width (ft) (bank to bank):** 95
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Boulder

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☑ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 8ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 8ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 4'
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:
Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Red Maple, Sycamore, Black Cherry, Ash, Black Walnut, and Honey suckle.

**Width of riparian corridor (ft):** 0-150'

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
**If yes, list:**
fish / macro's

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☑ water staining
- ☑ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**

**STREAM ID:** S7-T2-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/14/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, CG

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** West to east

**Width (ft) (water's edge to water's edge):** 2-3'

**Width (ft) (bank to bank):** 2-4'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other leaf litter

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Channel between two wetlands

**STREAM ID:** S8-T2-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/14/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** West to east

**Width (ft) (water's edge to water's edge):** 2-5'

**Width (ft) (bank to bank):** 3-5'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other leaf litter and muck

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2-1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2-1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:
Nastrurtium officinale

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Channel starts from a spring

**STREAM ID:** S5-T2-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/14/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** West to East

**Width (ft) (water's edge to water's edge):** 2-3'

**Width (ft) (bank to bank):** 2-4'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☑ Bedrock
- ☐ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other tree debris

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Channel down the side of a hillside.

**STREAM ID:** S4-T2-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/14/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** West to East

**Width (ft) (water's edge to water's edge):** 2-3'

**Width (ft) (bank to bank):** 3-5'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☑ Bedrock
- ☐ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other tree debris

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☑ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Channel down the side of a hillside.

**STREAM ID:** S6-T2-HL

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/14/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** Northwest to southeast

**Width (ft) (water's edge to water's edge):** 2-3'

**Width (ft) (bank to bank):** 2-4'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other tree debris

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Stream forms from a spring box and runs down logging road

**NOTES:**
Channel on a hillside running down the side of an old logging road.

**STREAM ID:** S8a-T5-HL

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☐ UNNAMED ☑ NAMED: Post Hollow Run

**Date:** 11/12/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** Southwest to Northeast

**Width (ft) (water's edge to water's edge):** 12'

**Width (ft) (bank to bank):** 12'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other leaf litter

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Betula lenta, Acer rubrum, Pinus strobilus

**Width of riparian corridor (ft):** 150+ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☑ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☑ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
S8a-T5-HL is a perennial headwater mountain stream.

**STREAM ID:** S9-T5-HL

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/12/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** west to east

**Width (ft) (water's edge to water's edge):** 2'

**Width (ft) (bank to bank):** 2'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☑ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other leaf litter

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Betula lenta, Fagus grandifolia

**Width of riparian corridor (ft):** 150+ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☑ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Culvert

**NOTES:**
S9-T5-HL originates from runoff along an access that forms a channel

**STREAM ID:** S8-T5-HL

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/12/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2'

**Width (ft) (bank to bank):** 3'
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other leaf litter

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Betula lenta, Acer rubrum

**Width of riparian corridor (ft):** 150+ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☑ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: A culvert is located along the access road

**NOTES:**
A small ephemeral channel that crosses an access road through a culvert.

**STREAM ID:** S7-T5-HL

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/12/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CB

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** east to west

**Width (ft) (water's edge to water's edge):** 12'

**Width (ft) (bank to bank):** 16'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Betula lenta, Acer rubrum

Width of riparian corridor (ft): 2ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Drians through road culvert

**NOTES:**
S7-T5-HL an intermittent headwater mountain stream.

**STREAM ID:** S1-T2-HL

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 11/14/2018

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF, CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** Northeast to southwest

**Width (ft) (water's edge to water's edge):** 2'

**Width (ft) (bank to bank):** 2'-3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☐ Undercutting ☑ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☐ natural
☑ manmade – Explain: Appears to be a manmade drainage channel
☐ man-altered – Explain:

**NOTES:**
small intermittent channel that flows through a pasture prior to entering a manmade road ditch

**STREAM ID: SS** S4-T4-HL

**STREAM DATA**

☐ ROW ☐ Project Facility STATE PA
☐ Access Road ☑ Staging/Storage Area

**County:** Clinton County

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/04/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW/CG

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** north to south

**Width (ft) (water's edge to water's edge):** 2 ft

**Width (ft) (bank to bank):** 2 ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 1'
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Sycamores, Black locust

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☑ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:
☑ man-altered – Explain: The channel is enclosed throughout much of the reach

**NOTES:**
Road ditch into an ephemeral channel, flow starts near a manhole. The channel is enclosed throughout much of the reach

# ATTACHMENT B

# WETLAND AND WATER RESOURCE SUMMARY TABLES

# WETLAND RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**

**LEIDY SOUTH PROJECT - HILLTOP LOOP**

**WETLAND RESOURCE SUMMARY TABLE**

| Wetland ID | Dataform ID | Cowardin Code | Resource Size | | | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Chapter 105.17 Wetland Designation | Watershed Information | | | Wetland Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | Watershed Name | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | |
| W1-T8-HL | W1-T8-HL-1a | PEM | 50 | 27 | 1,208 | No | Isolate | 41.366592 | -77.674508 | Other | Dry Run | HQ-CWF, MF | - | Located off a side road at nothern Northeast border of survey corridor. |
| W3-T7a-HL | W3-T7a-HL-1a | PEM | 344 | 208 | 49,294 | No | Isolate | 41.36564 | -77.675537 | EV | Dry Run | EV | - | Wetland located within and outside of the existing ROW. The wetland had saturation to the surface and a depleted matrix. |
| W3-T5-HL | W3-T5-HL-1c | PFO | 278 | 142 | 30,185 | Yes | Delineate | 41.366332 | -77.681863 | Other | Young Womans Creek | HQ-CWF, MF | - | Located in depressional area along the upper portion of the ROW. |
| W2-T5-HL | W2-T5-HL-1a | PEM | 110 | 534 | 31,566 | Yes | Delineate | 41.366531 | -77.684646 | Other | Young Womans Creek | HQ-CWF, MF | - | Located in and adjacent to the existing ROW. |
| | W2-T5-HL-1c | PFO | 220 | 90 | 20,362 | | | 41.366809 | -77.684086 | | | | | |
| W4-T5-HL | W4-T5-HL-1a | PEM | 102 | 20 | 2,566 | No | Isolate | 41.366791 | -77.688369 | Other | Young Womans Creek | HQ-CWF, MF | - | Wetland along an access road located to the south of the ROW. Surface water and aquatic fauna were present within the wetland. |
| W2-T7a-HL | W2-T7-HL-1a | PEM | 223 | 22 | 4,602 | No | Isolate | 41.367386 | -77.689357 | Other | Young Womans Creek | HQ-CWF, MF | - | Located in a ditch along a road recieving hydrology from S1-T2-HL. |
| W1-T5-HL | W1-T5-HL-1a | PEM | 395 | 84 | 35,047 | Yes | Delineate | 41.367773 | -77.689951 | EV | Young Womans Creek | HQ-CWF, MF | - | Wetland located across the entire survey corridor. Surface water and aquatic fauna were present in the northern PFO portion of the wetland. |
| | W1-T5-HL-1c | PFO | 302 | 217 | 60,913 | | | 41.367999 | -77.68933 | | | | | |
| | | PFO | 265 | 218 | 35,306 | | | 41.367461 | -77.690995 | | | | | |
| W1-T4-HL | W1-T4-HL1a | PEM | 166 | 32 | 3,804 | Yes | TNWW | 41.369707 | -77.699699 | EV | Young Womans Creek | HQ-CWF, MF | - | To the East of S1-T4-HL. Abutting S2-T4-HL and S3-T4-HL. Surface water and aquatic fauna were present in the northern PFO portion of the wetland. |
| | W1-T4-HL-1c | PFO | 155 | 65 | 9,639 | | | 41.37015 | -77.699414 | | | | - | |
| | | PFO | 185 | 38 | 5,437 | | | 41.369441 | -77.699837 | | | | - | |
| W2-T4-HL | W2-T4-HL-1a | PEM | 75 | 32 | 2,021 | No | TNWW | 41.36987 | -77.701392 | EV | Young Womans Creek | HQ-CWF, MF | - | Wetland in a depression behind an outbuilding. Surface saturation and a depleted matrix were present. |
| W3-T2-HL | W3-T2-HL-1a | PEM | 627 | 30 | 6,915 | Yes | TNWW | 41.370069 | -77.701545 | EV | Young Womans Creek | HQ-CWF, MF | - | Located across an existing pipeline ROW and extends along a road in a ditch. It recieves hydrology from S7-T2-HL. |
| W5-T2-HL | W5-T2-HL-1c | PFO | 187 | 79 | 9,547 | Yes | TNWW | 41.369811 | -77.702053 | EV | Young Womans Creek | HQ-CWF, MF | - | Located between two existing roads. This wetland is hydrologically connected to W3-T2-HL via S7-T2-HL. This wetland lies adjacent to W6-T2-HL |
| W6-T2-HL | W6-T2-HL-1d | POW | 54 | 35 | 1,968 | No | TNWW | 41.369611 | -77.702333 | Other | Young Womans Creek | HQ-CWF, MF | - | Formed from seeps at the bottom of a hill. This wetland abuts S8-T2-HL. This wetland lies adjacent to W5-T2-HL. |
| W4-T2-HL | W4-T2-HL-1c | PFO | 38 | 14 | 351 | No | Isolate | 41.370706 | -77.701556 | Other | Young Womans Creek | HQ-CWF, MF | - | Located to the West of W3-T2-HL Wetland. Intersects S4-T2-HL |
| W12-T5-HL | W12-T5-HL-1a | PEM | 43 | 23 | 633 | No | Isolate | 41.375128 | -77.712958 | Other | Young Womans Creek | HQ-CWF, MF | - | Located along existing access road. |
| W11-T5-HL | W11-T5-HL-1a | PEM | 41 | 16 | 551 | No | Isolate | 41.376382 | -77.714207 | Other | Post Hollow | EV | | Located along existing access road. |
| W1-T2-HL | W1-T2-HL-1d | POW | 52 | 31 | 1,521 | Yes | RPWWD | 41.363102 | -77.724659 | EV | Skunk Hollow | HQ-CWF, MF | - | Pond wetland abutting and adjacent to S1-T2-HL, receives hydrology from stream. |
| W2-T2-HL | W2-T2-HL-1a | PEM | 139 | 67 | 9,193 | No | RPWWD | 41.362278 | -77.725834 | EV | Skunk Hollow | HQ-CWF, MF | - | Wetland found in middle of cow pasture. Wetland is springfed and abuts S1-T2 |
| W3-T7-HL | W3-T7-HL-1b | PSS | 340 | 7 | 1,739 | No | RPWWD | 41.362091 | -77.725393 | EV | Skunk Hollow | HQ-CWF, MF | - | Wetland located in ditch along road. S1-T2-HL intercepts. Wetland receives hydrology from stream. |
| W2-T7-HL | W2-T7-HL-1a | PEM | 223 | 13 | 2,092 | No | RPWWD | 41.362019 | -77.725317 | EV | Skunk Hollow | HQ-CWF, MF | - | Located in a ditch along a road across for W3-T7-HL. Receives hydrology from S1-T2-HL. |
| | | | | **Total PEM Wetlands** | 149,492 | | | | | | | | | |
| | | | | **Total PSS Wetlands** | 1,739 | | | | | | | | | |
| | | | | **Total PFO Wetlands** | 171,740 | | | | | | | | | |
| | | | | **Total POW Wetlands** | 3,489 | | | | | | | | | |
| | | | | **TOTAL** | **326,460** | | | | | | | | | |

# WATERCOURSE RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**LEIDY SOUTH PROJECT - HILLTOP LOOP**
**WATERCOURSE RESOURCE SUMMARY TABLE**

| Watercourse ID | Stream Name | Type | Resource Size | | | Floodway - FEMA & 50ft (ac) | FEMA Floodplain (ac) | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Watershed Name | PA Code Chapter 93 Water Quality | | PFBC Classification | | | Watercourse Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | | | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | Stocked Trout | Naturally Reproducing Trout | Class A Wild Trout | |
| S1-T8-HL | UNT to Dry Run | Ephemeral | 222 | 2 | 445 | 0.63 | - | Yes | NRPW | 41.365341 | -77.67482 | Dry Run | HQ-CWF, MF | - | No | Yes | No | No water was present during the survey. |
| S2-T4-HL | UNT to Young Womans Creek | Intermittent | 122 | 12 | 1,531 | 0.33 | - | Yes | RPW | 41.369253 | -77.700014 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. No erosion noted. Flows through W1-T4-HL. |
| S3-T4-HL | UNT to Young Womans Creek | Ephemeral | 78 | 30 | 2,471 | | - | Yes | NRPW | 41.36906 | -77.700058 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. No erosion impact noted. Ties to T4-S2-HL. |
| S1-T4-HL | Young Womans Creek | Perennial | 533 | 95 | 50,495 | 4.59 | 4.30 | Yes | TNW | 41.36991 | -77.70035 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 24-36" water depth. Fish and macroinvertebrates noted. No erosion noted. |
| S7-T2-HL | UNT to Young Womans Creek | Ephemeral | 79 | 2 | 155 | 0.21 | - | No | NRPW | 41.369774 | -77.701982 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | No water present at the time of survey. No erosion noted. |
| S8-T2-HL | UNT to Young Womans Creek | Intermittent | 34 | 4 | 134 | 0.11 | - | No | RPW | 41.369645 | -77.702453 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. No erosion noted. Channel starts from a spring. |
| S5-T2-HL | UNT to Young Womans Creek | Ephemeral | 55 | 4 | 217 | 0.48 | - | No | NRPW | 41.370728 | -77.701445 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. No erosion noted. |
| S4-T2-HL | UNT to Young Womans Creek | Intermittent | 149 | 4 | 608 | | - | No | RPW | 41.370674 | -77.701548 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. Some evidence of erosion noted. |
| S6-T2-HL | UNT to Young Womans Creek | Intermittent | 36 | 2 | 72 | | - | Yes | RPW | 41.370843 | -77.701728 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. No erosion noted. The channel starts at a spring box and runs down logging road. |
| S8a-T5-HL | Post Hollow Run | Perennial | 164 | 10 | 1,522 | 0.09 | - | Yes | RPW | 41.377921 | -77.706329 | Post Hollow Run | EV, MF | - | Yes | Yes | Yes | 6-12" water depth. No erosion present. |
| S9-T5-HL | UNT to Young Womans Creek | Ephemeral | 41 | 2 | 81 | 0.19 | - | Yes | NRPW | 41.376984 | -77.705878 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | No water present. No erosion noted. Culvert located at watercourse. |
| S8-T5-HL | UNT to Young Womans Creek | Ephemeral | 127 | 2 | 253 | 0.30 | - | Yes | NRPW | 41.370088 | -77.70796 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. No erosion noted. |
| S7-T5-HL | UNT to Young Womans Creek | Intermittent | 1,319 | 16 | 20,097 | 2.04 | - | Yes | RPW | 41.370903 | -77.709682 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | No water present at the time of survey. The watercourse drains through a road culvert. No erosion was noted. |
| S1-T2-HL | UNT to Skunk Hollow | Intermittent | 848 | 2 | 1,809 | 1.65 | - | Yes | RPW | 41.362129 | -77.7255 | Skunk Hollow | HQ-CWF, MF | - | No | Yes | No | 0-6" water depth. Erosion noted from cattle. Flows to a man-made drainage channel |
| S4-T4-HL | UNT to Young Womans Creek | Ephemeral | 499 | 2 | 998 | 1.17 | - | Yes | NRPW | 41.353674 | -77.701874 | Young Womans Creek | HQ-CWF, MF | - | Yes | Yes | No | 0-6" water depth. No erosion noted. Captured channel in roadside ditch. Lies within culvert thru majority of the survey area. |
| | | | | | **Total Ephemeral Channels** | **4,620** | | | | | | | | | | | | |
| | | | | | **Total Intermittent Channels** | **24,251** | | | | | | | | | | | | |
| | | | | | **Total Perennial Channels** | **52,017** | | | | | | | | | | | | |
| | | | | | **TOTAL** | **80,888** | | | | | | | | | | | | |

ATTACHMENT C

PENNSYLVANIA LEVEL 2 RAPID ASSESSMENT REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

ATTACHMENT C

HILLTOP LOOP LEVEL 2 RAPID ASSESSMENT REPORT

CHAPMAN TOWNSHIP, CLINTON COUNTY, PENNSYLVANIA

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

ATTACHMENT C

HILLTOP LOOP LEVEL 2 RAPID ASSESSMENT REPORT

CHAPMAN TOWNSHIP, CLINTON COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Williams) to conduct a Functional Assessment of wetland and water resources associated with the Leidy South Project – Hilltop Loop (Project) located in Chapman Township, Clinton County, Pennsylvania, on the Renovo East and Young Womans Creek, Pennsylvania, USGS 7.5 Minute Quadrangle. The purpose of the Functional Assessment was to evaluate the condition of onsite aquatic resources that will be impacted as a result of the Project in order to meet the requirements as outlined in 25 Pa. Code Chapter 105 regulations. This report provides information on the methodology, data collected, field findings, and conclusions pertaining to the condition of wetland and water resources to be impacted. The Functional Assessment was conducted by WHM from November 2018 through August 2019.

# 2.0 METHODOLOGY

The Functional Assessment was conducted in accordance with the procedures and technical guidelines outlined in the Pennsylvania Department of Environmental Protection's (PADEP) Level 2 Rapid Assessment Protocols. A desktop analysis was conducted to determine assessment areas (AA) and zones of influence (ZOI). Field data was collected, and the desktop and field data were used in conjunction to arrive at the overall condition scores. The observations made represent the assessor's best professional judgement exercised with the guidance of the Rapid Assessment Protocols.

## 2.1 WETLAND CONDITION ASSESSMENT

The Functional Assessment of the onsite wetlands was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol* (Wetland Protocol). Aerial and satellite imagery combined with ArcGIS were utilized to determine the AA. The AA was determined based on the following criteria as outlined in the Wetland Protocol:

1. The AA is comprised of the entire wetland if the wetland is less than or equal to 1.0 acre in size.
2. If the wetland is larger than 1.0 acre in size and the impact area is less than 1.0 acre, the AA will be established around the impact area until the AA is 1.0 acre in size. In general, the AA will be a representative sampling of the entire wetland while still encompassing the impact area.
3. The AA is comprised of the entire wetland impact area if the proposed impact is greater than 1.0 acre in size.

Once the AA has been established, the wetland Zone of Influence (ZOI) is determined and is comprised of the land extending 300 ft. beyond the perimeter of the AA. The AA or ZOI is then assessed using the six condition indices outlined in Table 1. As noted in the table, two sub-indices are utilized to evaluate Vegetation Condition and Water Quality Stressors.

| Index | Assessment Method | Zone Assessed |
|---|---|---|
| Wetland ZOI Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Roadbed Presence Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Vegetation Condition | | |
| *Invasive Species Presence Sub-Index* | Field Observation | AA |
| *Vegetation Stressor Presence Sub-Index* | Field Observation | AA |
| Hydrologic Modification Stressor | Field Observation | AA |
| Sediment Stressor | Field Observation | AA |
| Water Quality Stressor | | |
| *Eutrophication Stressor Presence Sub-Index* | Field Observation | AA |
| *Contaminant/Toxicity Stressor Presence Sub-Index* | Field Observation | AA |

Table 1. Wetland Condition Indices.

According to the Wetland Protocol, the Wetland Condition Index Form (WCIF) and three supplemental worksheets (Roadbed Worksheet, Invasive Presence Worksheet, and Stressor Worksheet) are used to calculate the Overall Condition Index for the wetland being assessed. Using the WCIF, each of the six indices discussed in Table 1 are scored on a scale of 1 to 20, with 20 being the optimal condition. The Overall Condition Index is calculated by summing the six main indices and then dividing by 6. In general, the closer a score is to one, the better the condition the wetland is.

## 2.2 RIVERINE CONDITION ASSESSMENT

The Functional Assessment of onsite perennial and intermittent streams was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol* (Riverine Protocol). Aerial and satellite imagery and ArcGIS were utilized to determine the upper and lower boundaries of the AA. The boundaries of the AA were determined based on all or some of the following criteria as outlined in the Riverine Protocol:

1. The upstream influence of backwater projected as part of the hydrologic and hydraulic (H&H) analysis and application of the same distance downstream; or
2. 20 times the channel width at bankfull stage upstream and downstream; or
3. 100 feet upstream and downstream of the proposed location, whichever is greater.

Once the upper and lower boundaries of the AA were established, the Riparian Vegetation and Riparian ZOI were established. The Riparian Vegetation Areas was

established using the following the criteria as outlined in the Riverine Protocol. The following criteria are listed in order of the method that is preferred by PADEP:

1. Hydrologic modeling analysis to determine the 100-year storm event; or
2. 100-year Federal Emergency Management Agency (FEMA) floodplain mapping; or
3. In FEMA unmapped areas, the flood prone area width is estimated by determining the elevation that corresponds to twice the maximum depth of the bankfull channel as taken from the established bankfull stage; or
4. In FEMA unmapped areas where hydrologic modeling analysis and stream cross-section data is not available, estimate the flood prone area width by extending 100 feet from the stream bank towards the valley margins. Best professional judgement is to be utilized by the assessor if one or more of the valley margins are less than 100 feet from the bank and adjust boundaries.

In areas where a mapped FEMA floodplain was available, ArcGIS was used to determine the boundary. In all instances, best professional judgement was used to define the Riparian Vegetation areas in accordance with the criteria provided above.

Once the Riparian Vegetation Areas were established, Riparian ZOI boundaries were determined by extending 100 feet landward from the Riparian Vegetation Area boundaries on each side of the stream and along the entire length of the Riparian Vegetation Area. If assessing the uppermost headwaters of a watercourse, the area 100 feet above the watercourse may be included in the Riparian Zone boundary.

In accordance with the Riverine Protocol, the Riparian ZOI is not evaluated as part of the condition assessment for perennial streams with a drainage area greater than 100 square miles or less than 2,000 square miles. Likewise, the Instream Habitat condition will not be evaluated for intermittent streams. Neither of the aforementioned indices will be included in the assessment when evaluating those stream types unless deemed necessary by PADEP.

Once the AA and ZOI have been determined, the riverine condition is assessed using the five condition indices outlined in Table 2. As noted in the table, not all indices are used to determine the overall condition of the channel being evaluated, unless deemed necessary by PADEP.

| Index | Watercourse Classification | | | Assessment Method | Zone Assessed |
|---|---|---|---|---|---|
| | **Intermittent** | **Perennial** (Drainage area ≤ 100 sq. miles) | **Perennial** (Drainage area >100 sq. miles but ≤ 2,000 sq. miles ) | | |
| Channel/Floodplain Condition | Yes | Yes | Yes | Field Observations | AA |
| Riparian Vegetation Condition | Yes | Yes | Yes | Desktop Analysis of Aerial Imagery<br>Field Observations | AA<br>Riparian Vegetation Area |
| Riparian Zone of Influence Condition | Yes | Yes | No | Desktop Analysis of Aerial Imagery<br>Field Observations | Riparian ZOI |
| Instream Habitat Condition | No | Yes | Yes | Field Observations | AA |
| Channel Alteration Condition | Yes | Yes | Yes | Field Observations | AA |

Table 2. Indices to be determined based on watercourse classification.

According to the Riverine Protocol, the Riverine Assessment Form 1 (RAF1) is to be used to calculate the Riverine Condition Index for the stream being assessed. Using RAF1, each of the six indices discussed in Table 2 are scored on a scale of 1 to 20, with 20 being the optimal condition. When calculating the Riparian Vegetation Condition Index and the Riparian ZOI Condition Index, the left and right sides are scored, summed together, and then divided by 2 for the overall score for each.

The indices evaluated in Table 2 are weighted equally when calculating the final score for the Riverine Condition Index (RCI). Therefore, to calculate RCI, each index score is added together and then divided by the number of indices evaluated. For example, when calculating RCI for an intermittent stream, the scores for the four indices assessed would be added together and divided by 4. In general, the closer the score is to 1, the better the condition of the stream being assessed.

## 3.0 RESULTS

Seven (7) wetlands and five (5) streams were evaluated during the assessment. Attachment A- Assessment Forms includes data collected for the wetlands and watercourses at the site. Attachment B - Figures includes mapping of the resources evaluated during the assessment and their respective AA and ZOI boundaries. The following provides a descriptive summary of the data collected during the Functional Assessment.

### 3.1 WETLANDS

Overall seven (7) wetlands were assessed for the purposes of the Functional Assessment. Due to proximity, wetlands were combined as applicable, which resulted in a total of five (5) assessment areas. In general, the wetland ZOIs were comprised of forests, the existing pipeline right-of-way, agricultural fields, and other stream and wetland features.

| Leidy South - Hilltop Loop Project - Wetland Condition Assessment Summary Table | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Assessment Area Number | Wetland ID | Assessment Area (Acres) | ZOI Condition Index | Roadbed Presence Index | Vegetation Condition Index | Hydrologic Modification Index | Sediment Stressor Index | Water Quality Stressor Index | Overall Condition Index |
| 1 | W3-T7a-HL | 1.00 | 0.62 | 0.65 | 0.58 | 0.85 | 1.00 | 1.00 | 0.78 |
| 2 | W1-T5-HR | 1.00 | 0.74 | 0.97 | 0.78 | 0.85 | 1.00 | 1.00 | 0.89 |
| 3 | W1-T4-HR | 0.49 | 0.79 | 0.77 | 0.55 | 0.90 | 1.00 | 1.00 | 0.83 |
| 4 | W2-T4-HL, W3-T2-HL, & W5-T2-HL | 0.34 | 0.57 | 0.23 | 0.83 | 0.90 | 1.00 | 1.00 | 0.75 |
| 5 | W4-T5-HR | 0.01 | 0.55 | 0.78 | 0.88 | 1.00 | 1.00 | 1.00 | 0.87 |

Table 3 – Wetland Condition Assessment Summary Table

Functional assessments resulted in Overall Condition Index scores ranged from 0.75 to 0.89 for the five (5) wetland functional assessments. See Attachment A (Assessment Forms) and Attachment B (Figures) for more detail.

### 3.2 STREAMS

Overall five (5) streams were assessed for the purposes of the Functional Assessment. In general, the Riparian Vegetation and Riparian ZOIs were comprised of forests, the existing pipeline right-of-way, agricultural fields, and other stream and wetland features.

| Leidy South - Hilltop Loop Project - Riparian Condition Assessment Summary Table | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Assessment Area Number | Stream ID | Assessment Area Length (Feet) | Channel / Floodplain Condition Index | Riparian Vegetation Condition Index | Riparian ZOI Condition Index | Instream Habitat Condition Index | Channel Aleration Condition Index | Overall Condition Index |
| 6 | S7-T5-HL | 225 | 0.95 | 0.89 | 0.96 | N/A | 0.75 | 0.89 |
| 7 | S8-T5-HL | 127 | 0.90 | 0.84 | 0.84 | N/A | 0.75 | 0.83 |
| 8 | S7-T5-HL | 196 | 0.90 | 0.87 | 0.98 | N/A | 0.75 | 0.88 |
| 9 | S9-T6-HL | 227 | 0.75 | 0.47 | 0.61 | N/A | 0.25 | 0.52 |
| 10 | S1-T4-HL | 280 | 0.75 | 0.57 | 0.87 | 0.80 | 0.40 | 0.68 |

Table 4 – Riparian Condition Assessment Summary Table

Functional assessment scores for the five (5) streams ranged from 0.52 to 0.89 for the five functional assessments. See Attachment A (Assessment Forms) and Attachment B (Figures) for more detail.

## 4.0 CONCLUSIONS

Seven wetlands and five streams were evaluated during the Functional Assessment. Because some of the wetlands and streams were located within the same area and possessed similar characteristics and habitat, they were grouped together in one assessment area during the evaluation. The Overall Condition Index for wetlands ranged from 0.75 to 0.89, indicating that wetlands for the project were of moderate to high quality. The Riverine Condition Index for the streams ranged from 0.52 to 0.89, indicating the streams were of poor to high quality.

## 5.0 REFERENCES


1. Pennsylvania Code. 2017. http://www.pacode.com/secure/data/025/025toc.html.

2. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-003.

3. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-002.

4. United States Geological Survey (USGS). Topographic Quadrangle 7.5 minute Series Quadrangles, Renovo East and Young Womans Creek, PA.

# ATTACHMENT A

# ASSESSMENT FORMS

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-201 | Hilltop Loop | 7/23/2019 | 0.61 | 1 | 1.00 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Jim Haney, Curtis George | 41.3657 | -77.6757 | Assessment Area #1 consists of wetland W3-T7a-HL. |

**General Comments: W3-T7a-HL is a PEM wetland sprawling across an existing pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 51% | 9% | 8% | 28% | 4% | | | |
| | Score: | 18 | 13 | 10 | 4 | 2 | | | |
| | Total Sub-score: | 9.18 | 1.17 | 0.80 | 1.12 | 0.08 | 0.00 | 12.35 | 0.62 |

**Comments: Primary land uses include: forests, PEM, maintained ROW/lawn, and impervious surfaces.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| a. Roadbed 0-100: | 14 | * (0.67) | 9 |
| b. Roadbed 100-300: | 11 | * (0.33) | 4 |
| | | Total Score: | 13 |

**0.65**

**Comments:**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present.<br>**Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species.<br>**Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species.<br>**Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Comments:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | | Marginal | | | | Poor | | | | | | | | | | |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. | **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. | **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | | | **High Marginal:** Four vegetation stressors present within the AA boundary. | **Low Marginal:** Five vegetation stressors present within the AA boundary. | | | Greater than five vegetation stressors present within the AA boundary. | | | | | | | | | | CI = Total Score/40 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 9 | **Total Score** |
| **b. Vegetation Sub-Score:** | 14 | **23** |
| | | **0.58** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | | Marginal | | | | Poor | | | | | | | | | | |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. | **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. | **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | | | **High Marginal:** Four hydrologic stressors present within the AA boundary. | **Low Marginal:** Five hydrologic stressors present within the AA boundary. | | | Greater than five hydrologic stressors present within the AA boundary. | | | | | | | | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | |
|---|---|
| **Score:** | **17** |
| | **0.85** |

**5. Sediment Stressor Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | | Marginal | | | | Poor | | | | | | | | | | |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. | **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. | **Low Suboptimal:** Three sediment stressors present within the AA boundary. | | | **High Marginal:** Four sediment stressors present within the AA boundary. | **Low Marginal:** Five sediment stressors present within the AA boundary. | | | Greater than five sediment stressors present within the AA boundary. | | | | | | | | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |
| | **1.00** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |
| | | **1.00** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.78** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hilltop Loop | | | 7/23/2019 | Jim Haney, Curtis George |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 1 | 41.3657 | -77.6757 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | 1 | 1 | 1 | 100-300 ft. | 2 | 1 | 2 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 2 | 2 | 4 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 3 | | | 100-300 ft. | 6 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | X | | |
| ***Dead or dying trees (trunks still standing)*** * | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| MIVI | | | 20% | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 20 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-201 | Hilltop Loop | 7/23/2019 | 0.11 | 2 | 1.00 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Jim Haney, Curtis George | 41.3676 | -77.6909 | Assessment Area #2 consists of wetland W1-T5-HL. |

**General Comments: PEM/PFO wetland complex that stretches across an existing pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Wetland Zone of Influence (300 foot area around AA perimeter) | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | **CI = Total Score/20** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 9% | 22% | 53% | 16% | 1% | | **Total Score:** | **CI** |
| | Score: | 19 | 18 | 16 | 4 | 3 | | | |
| | Total Sub-score: | 1.71 | 3.96 | 8.48 | 0.64 | 0.03 | 0.00 | **14.82** | **0.74** |

**Comments: Land use includes forests, PEM/PFO wetlands, existing dirt access road, and maintained ROW/lawn.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | **CI = Total Score/20** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 20 | * (0.67) | 13 |
| **b. Roadbed 100-300:** | 18 | * (0.33) | 6 |
| | | **Total Score:** | **19** |
| | | | **0.97** |

**Comments:**

# Wetland Condition Assessment Form

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**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 16 | **Total Score** |
| **b. Vegetation Sub-Score:** | 15 | **31** |

**CI = Total Score/40** **0.78**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **17** |

**CI = Total Score/20** **0.85**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**CI = Total Score/40** **1.00**

**Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.**

**Overall Condition Index:** **0.89**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hilltop Loop | | | 7/23/2019 | Jim Haney, Curtis George |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 2 | 41.3676 | -77.6909 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 0 | | | 100-300 ft. | 2 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)*** * | X | | |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| romu | | 5% | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 5 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-201 | Hilltop Loop | 7/23/2019 | 0.10 | 3 | 0.49 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Jim Haney, Curtis George | 41.3695 | -77.6998 | Assessment Area #3 consists of wetland W1-T4-HL. |

**General Comments: PEM/PFO wetland complex located at the toe of slope and adjacent to Young Woman's Creek.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 26% | 44% | 14% | 15% | 2% | | **Total Score:** | **CI** |
| | Score: | 20 | 18 | 15 | 4 | 1 | | | |
| | Total Sub-score: | 5.20 | 7.92 | 2.10 | 0.60 | 0.02 | 0.00 | **15.84** | **0.79** |

**CI = Total Score/20**

**Comments: Primary land uses include streams, forests, PEM/PFO wetlands, houses/impervious surfaces, and maintained lawns/right-of-ways.**

**2. Roadbed Presence Index**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 |
| **b. Roadbed 100-300:** | 12 | * (0.33) | 4 |
| | | **Total Score:** | **15** |

**CI = Total Score/20** **0.77**

**Comments:**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 7 | **Total Score** |
| **b. Vegetation Sub-Score:** | 15 | **22** |

**CI = Total Score/40** **0.55**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **18** |

**CI = Total Score/20** **0.90**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**CI = Total Score/40** **1.00**

**Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.**

**Overall Condition Index:** **0.83**

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hilltop Loop | | | 7/23/2019 | Jim Haney, Curtis George |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| | 3 | 41.3695 | -77.6998 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 1 | 1 | 1 | 100-300 ft. | 3 | 2 | 6 |
| Total Scores: | 0-100 ft. | 1 | | | 100-300 ft. | 6 | | |

**Road Comments: Other roadbeds include a dirt path/access road, a paved driveway, and a sidewalk. Unmaintained dirt path was given a weighing factor of "1" as it is most similar to a gravel road. Driveway and sidewalk was given a higher weighing factor as they are impervious surfaces.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | X | | |
| ***Dead or dying trees (trunks still standing)*** * | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| mivi | | | 45 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 45 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-201 | Hilltop Loop | 7/23/2019 | 0.10 | 4 | 0.34 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Jim Haney, Curtis George | 41.3700 | -77.7017 | Assessment Area #4 consists of wetlands W2-T4-HL, W3-T2-HL, & W5-T2-HL. |

**General Comments: PEM/PFO wetland complex located at the toe of slope and adjacent to Young Woman's Creek.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 8% | 37% | 10% | 5% | 27% | 13% | **Total Score:** | **CI** |
| | Score: | 20 | 18 | 15 | 8 | 4 | 1 | | |
| | Total Sub-score: | 1.60 | 6.66 | 1.50 | 0.40 | 1.08 | 0.13 | **11.37** | **0.57** |

**CI = Total Score/20**

**Comments: Primary land uses include streams, PEM/PFO wetlands, forests, maintained yards and right-of-ways, and impervious surfaces (roads and driveways).**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 4 | * (0.67) | 3 |
| **b. Roadbed 100-300:** | 6 | * (0.33) | 2 |
| | | **Total Score:** | **5** |

**CI = Total Score/20** **0.23**

**Comments: Young Woman's Creek Road & Little Italy Road are both located within 0-300ft of the Wetland Assessment Area as well as 5 dirt road/driveways.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** |
| **b. Vegetation Sub-Score:** | 13 | **33** |

**CI = Total Score/40** **0.83**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **18** |

**CI = Total Score/20** **0.90**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**CI = Total Score/40** **1.00**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.75** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hilltop Loop | | | 7/23/2019 | Jim Haney, Curtis George |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 4 | 41.3700 | -77.7017 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | 2 | 2 | 4 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 4 | 2 | 8 | 100-300 ft. | 5 | 2 | 10 |
| Total Scores: | 0-100 ft. | 12 | | | 100-300 ft. | 10 | | |

**Road Comments: Young Woman's Creek Road & Little Italy Road are both located within 0-300ft of the Wetland Assessment Area as well as 5 dirt road/driveways. Other roadbeds were given a weighing factor of "2" because they are, for the most part, impervious surfaces.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 2 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | |
| **Total Number:** | **3** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | X | 1 | |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)*** * | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-201 | Hilltop Loop | 7/23/2019 | 0.01 | 5 | 0.01 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Jim Haney, Curtis George | 41.3764 | -77.7142 | Assessment Area #5 consists of wetland W11-T5-HL. |

**General Comments: Small, isolated PEM wetland located in an existing right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | | Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | | Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | | Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition Category: | | | | | | | Total Score: | CI |
| Scoring: | % ZOI Area: | 14% | 25% | 18% | 29% | 14% | | | |
| | Score: | 19 | 18 | 13 | 4 | 2 | | | |
| | Total Sub-score: | 2.66 | 4.50 | 2.34 | 1.16 | 0.28 | 0.00 | 10.94 | 0.55 |

**Comments: Primary land uses include: PEM wetland, forested areas, existing maintained right-of-way and dirt access roads.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | High Optimal: No roadbeds present within 100 feet of the AA boundary | | | Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | | High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. | | | | Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. | | | | Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. | | | | Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

**Comments:**

| | Condition Categories | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary | | | Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | | High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. | | | | Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. | | | | Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. | | | | Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

| | Condition Score | Weighting | Sub-Scores | |
|---|---|---|---|---|
| a. Roadbed 0-100: | 16 | * (0.67) | 11 | |
| b. Roadbed 100-300: | 15 | * (0.33) | 5 | |
| | | Total Score: | 16 | 0.78 |

**Comments:**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** |
| **b. Vegetation Sub-Score:** | 15 | **35** |

**CI = Total Score/40** **0.88**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**CI = Total Score/40** **1.00**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.87** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hilltop Loop | | | 7/23/2019 | Jim haney, Curtis George |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| | 6 | 41.3764 | -77.7142 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 2 | 1 | 2 | 100-300 ft. | 3 | 1 | 3 |
| Total Scores: | 0-100 ft. | 2 | | | 100-300 ft. | 3 | | |

**Road Comments: Non-maintained, dirt access roads exist in the Wetland ZOI. These were given a weighing factor of "1" as they are not maintained roadways.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | X |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)*** * | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

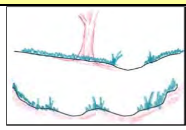
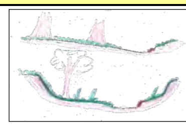
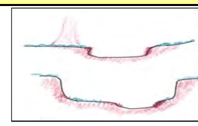
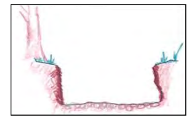
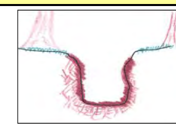
| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| WILLIAMS201 | Leidy South - Hilltop Loop | Chapman Twp., Clinton Co. | 08/01/2019 | Designated: HQ-CWF, MF | Existing: | 6 | 225ft |

| Latitude | 41.372654 | Longitude | -77.714248 | FGM Level 1 Channel Classification | A2 |
|---|---|---|---|---|---|

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Jim Haney, Curtis George | S7-T5-HL | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

**Condition Category**

| | Optimal | Suboptimal | Marginal | Poor | Severe |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| **Channel / Floodplain** | **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. | **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. | **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments: Culvert under road**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 19 | 0.95 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

**Condition Category**

| | Optimal | Suboptimal | | Marginal | | Poor | |
|---|---|---|---|---|---|---|---|
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Poor | | | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 90% | 10% | | | | | 0.92 |
| | Score: | 20 | 3 | | | | | |
| | Total Sub-score: | 18.00 | 0.30 | 0.00 | 0.00 | 0.00 | 0.00 | |

Side Sub-Index = SUM(%Areas*Scores)/20

| | Condition Category | Optimal | Poor | | | | | |
|---|---|---|---|---|---|---|---|---|
| Left Side | % Riparian Area: | 85% | 15% | | | | | 0.87 |
| | Score: | 20 | 3 | | | | | |
| | Total Sub-score: | 17.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | |

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.89 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | | | | | High | | | | Low | High | | | | Low | High | | | | Low | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Poor | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 93% | 7% | | | | | 0.94 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 3 | | | | | | |
| | Total Sub-score: | 18.60 | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Poor | | | | | | |
| Left Side | % Riparian Area: | 97% | 3% | | | | | 0.97 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 3 | | | | | | |
| | Total Sub-score: | 19.40 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.96 |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: N/A - UNT is an intermittent stream |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | CI = (Score)/20 SCORE | CI |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present | | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | |
| | | | | | | High | | | | Low | High | | | | Low | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | SCORE 15 | 0.75 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.89** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

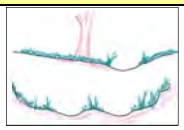
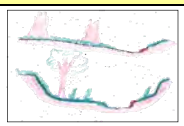
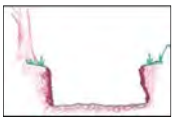
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAMS201 | Leidy South - Hilltop Loop | | Chapman Twp., Clinton Co. | 08/01/2019 | Designated: HQ-CWF, MF | Existing: | 7 | 127ft |
| Latitude | 41.370047 | Longitude | -77.708003 | FGM Level 1 Channel Classification | | | A6 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| David Wood, Paul Fisher, Jim Haney, Ryan Nelson | S8-T5-HL | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| Channel / Floodplain |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| SCORE | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 18 | 0.90 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | |
| Riparian Vegetation (Floodplain) | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| SCORE | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Poor | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 79% | 21% | | | | | 0.83 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 4 | | | | | | |
| | Total Sub-score: | 15.80 | 0.84 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Poor | | | | | | |
| Left Side | % Riparian Area: | 81% | 19% | | | | | 0.85 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 4 | | | | | | |
| | Total Sub-score: | 16.20 | 0.76 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.84 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | |
| | | | | | | High | | | Low | | High | | | Low | | High | | | Low | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | Optimal | Poor | | | | | Side Sub-Index | |
| Right Side | % Riparian Area: | 77% | 23% | | | | | 0.82 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 4 | | | | | | |
| | Total Sub-score: | 15.40 | 0.92 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Poor | | | | | | |
| Left Side | % Riparian Area: | 82% | 18% | | | | | 0.86 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 4 | | | | | | |
| | Total Sub-score: | 16.40 | 0.72 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.84 |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | Comments:N/A - UNT is an intermittent stream |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE | |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | Comments: Channel crosses a road. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | |
| | | | | | | High | | | Low | | High | | | Low | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 15 | 0.75 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| *NOTE:* **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | 0.83 |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

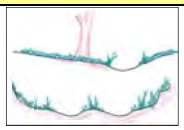
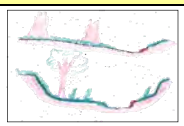
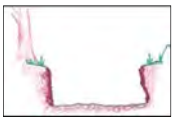
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| WILLIAMS201 | Leidy South - Hilltop Loop | Chapman Twp., Clinton Co. | 08/02/2019 | Designated: HQ-CWF, MF | Existing: N/A | 08 | 196ft |
| **Latitude** | 41.370942 | **Longitude** | -77.709703 | **FGM Level 1 Channel Classification** | | A2 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Jim Haney, Curtis George | S7-T5-HL | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| **SCORE** | 18 | 0.90 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Poor | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 83% | 17% | | | | | 0.86 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 4 | | | | | | |
| | **Total Sub-score:** | 16.60 | 0.68 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Poor | | | | | | |
| **Left Side** | % Riparian Area: | 84% | 16% | | | | | 0.87 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 4 | | | | | | |
| | **Total Sub-score:** | 16.80 | 0.64 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.87 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | Comments: |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | **High** / **Low** | **High** / **Low** | **High** / **Low** | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sums of % Riparian ZOI Blocks equal 100

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | **Optimal** | **Poor** | | | | | **Side Sub-Index** | |
| **Right Side** | % Riparian Area: | 99% | 1% | | | | | **0.99** | **Side Sub-Index = SUM(%Areas*Scores)/20** |
| | Score: | 20 | 4 | | | | | | |
| | Total Sub-score: | **19.80** | **0.04** | **0.00** | **0.00** | **0.00** | **0.00** | | |
| | Condition Category | **Optimal** | **Poor** | | | | | | |
| **Left Side** | % Riparian Area: | 97% | 3% | | | | | **0.98** | **CI = (Left Side CI + Right Side CI)/2** |
| | Score: | 20 | 4 | | | | | | |
| | Total Sub-score: | **19.40** | **0.12** | **0.00** | **0.00** | **0.00** | **0.00** | | |

| | **CI** |
|---|---|
| | **0.98** |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | Comments:N/A - UNT is an intermittent stream |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | **CI = (Score)/20** / **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **SCORE** / |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | Comments: |
|---|---|---|---|---|---|
| | **Negligible** | **Minor** | **Moderate** | **Severe** | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | |
| | | **High** / **Low** | **High** / **Low** | | **CI = (Score)/20** / **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **SCORE** 15 / **0.75** |

| **RIVERINE CONDITION INDEX (RCI)** | | **RCI** |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.88** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

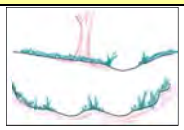
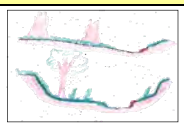
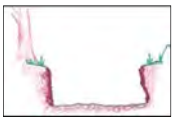
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAM-18-201 | Leidy South - Hilltop Loop | | Clinton County | 08/02/2019 | Designated: HQ-CWF, MF | Existing: N/A | 09 | 227 ft |
| **Latitude** | 41.362129 | **Longitude** | -77.7255 | **FGM Level 1 Channel Classification** | | | A6 | |

| Evaluator(s) | Stream Name and Information | Notes: UNT to Skunk Hollow |
|---|---|---|
| Charly Bloom | S1-T2-HL | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present. **Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain. **Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches. **Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts; **Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally. **Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation. **Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain. **Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| **SCORE** | 15 | 0.75 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | **High** | **Low** | **High** | **Low** | **High** | **Low** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Optimal | Optimal | Marginal | Poor | Poor | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 3% | 3% | 35% | 1% | 39% | 9% | |
| | Score: | 20 | 18 | 17 | 6 | 4 | 1 | 0.44 |
| | **Total Sub-score:** | **0.60** | **0.54** | **5.95** | **0.06** | **1.56** | **0.09** | |
| | Condition Category | **Optimal** | **Optimal** | **Suboptimal** | **Poor** | **Poor** | | |
| **Left Side** | % Riparian Area: | 23% | 4% | 19% | 50% | 4% | | |
| | Score: | 20 | 18 | 13 | 4 | 1 | | 0.49 |
| | **Total Sub-score:** | **4.60** | **0.72** | **2.47** | **2.00** | **0.04** | **0.00** | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.47 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | |
| | | | | | | High | | | Low | | High | | | Low | | High | | | Low | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | | | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 40% | 1% | 9% | 1% | 35% | 14% | 0.54 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 17 | 11 | 8 | 4 | 1 | | |
| | Total Sub-score: | **8.00** | **0.17** | **0.99** | **0.08** | **1.40** | **0.14** | | |
| | Condition Category | | | | | | | | |
| Left Side | % Riparian Area: | 61% | 1% | 35% | 3% | | | 0.69 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 17 | 4 | 1 | | | | |
| | Total Sub-score: | **12.20** | **0.17** | **1.40** | **0.03** | **0.00** | **0.00** | | |

| CI |
|---|
| 0.61 |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE | 0.00 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | | CI = (Score)/20 | CI |
| | | | | | | High | | | Low | | High | | | Low | | | | | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE | 5 | 0.25 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | 0.52 |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

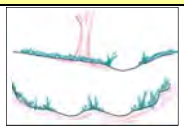
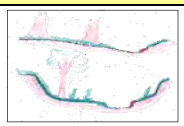
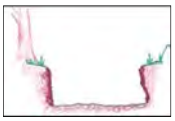
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAM-18-201 | Leidy South - Hilltop Loop | | Clinton County | 08/01/2019 | Designated: HQ-CWF, MF | Existing: N/A | 10 | 280 ft |
| Latitude | 41.36991 | Longitude | -77.70035 | FGM Level 1 Channel Classification | | | B3 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Charly Bloom | Young Womans Creek: S1-T4-HL | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| Channel / Floodplain |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| SCORE | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 15 | 0.75 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | |
| Riparian Vegetation (Floodplain) | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| SCORE | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | | | | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | Condition Category | | | | | | | | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | % Riparian Area: | 4% | 3% | 3% | 30% | 6% | 54% | 0.41 | |
| | Score: | 20 | 19 | 17 | 14 | 7 | 3 | | |
| | Total Sub-score: | 0.80 | 0.57 | 0.51 | 4.20 | 0.42 | 1.62 | | |
| Left Side | Condition Category | Marginal | Marginal | Marginal | Marginal | Marginal | | | |
| | % Riparian Area: | 34% | 16% | 4% | 16% | 30% | | 0.74 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 19 | 17 | 14 | 7 | | | |
| | Total Sub-score: | 6.80 | 3.04 | 0.68 | 2.24 | 2.10 | 0.00 | | CI: 0.57 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | |
| | | High | Low | High | Low | High | Low | | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sums of % Riparian ZOI Blocks equal 100

| | | | | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | | | | | | | | |
| Right Side | % Riparian Area: | 92% | 3% | 3% | 2% | | | 0.96 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 19 | 7 | 1 | | | | |
| | Total Sub-score: | 18.40 | 0.57 | 0.21 | 0.02 | 0.00 | 0.00 | | |
| | Condition Category | | | | | | | | |
| Left Side | % Riparian Area: | 60% | 12% | 28% | | | | 0.79 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 15 | 7 | | | | | |
| | Total Sub-score: | 12.00 | 1.80 | 1.96 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.87 |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | | Comments: |
|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | CI = (Score)/20 | CI |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | | SCORE 16 | 0.80 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | Comments: | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | Minor | | Moderate | | Severe | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | CI = (Score)/20 | CI |
| | | High | Low | High | Low | | | | | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | | | SCORE 8 | 0.40 |

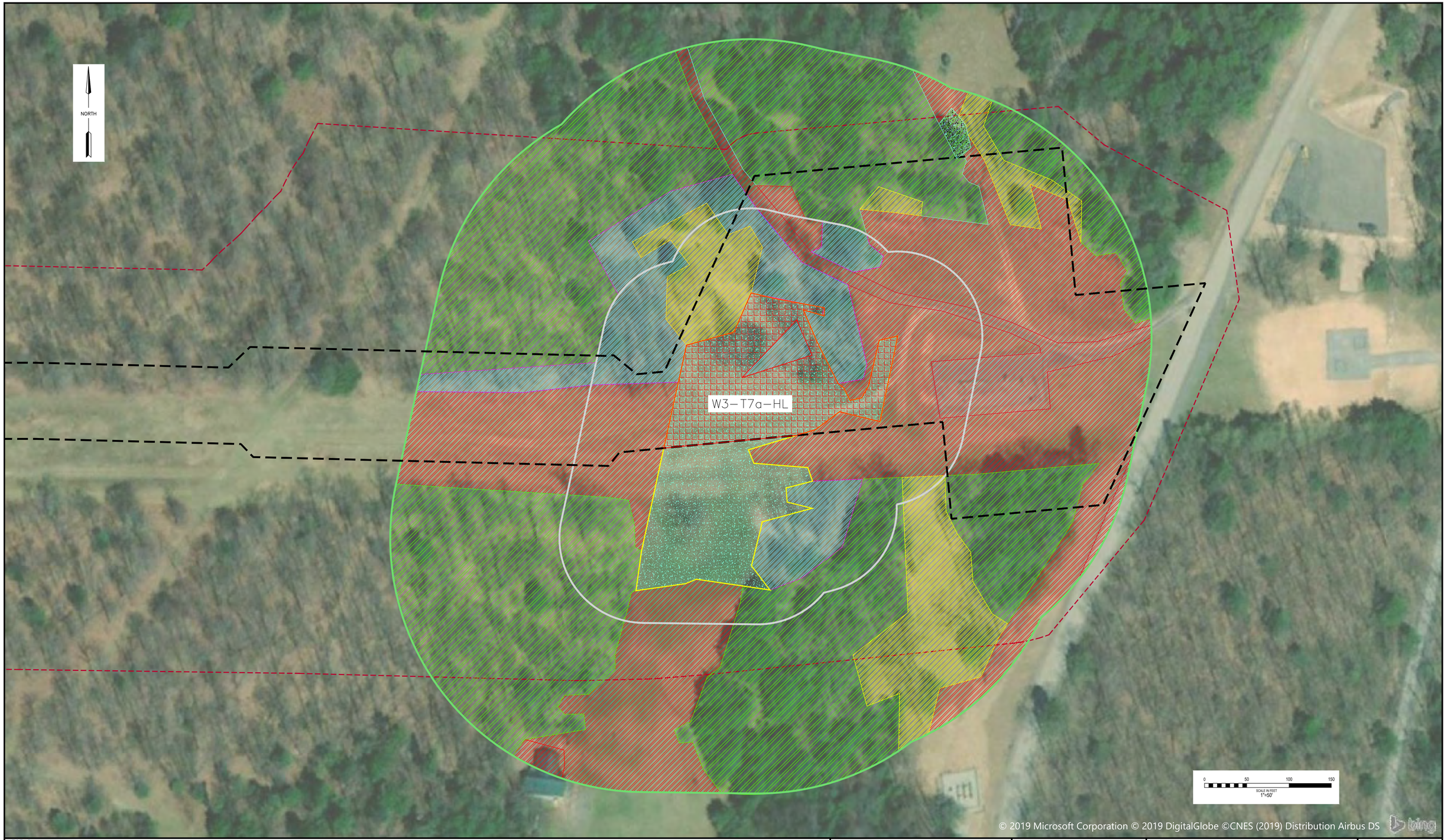
| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | 0.68 |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

ATTACHMENT B

FIGURES




LEGEND

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN-ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

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| DATE | DESCRIPTIONS | APP |
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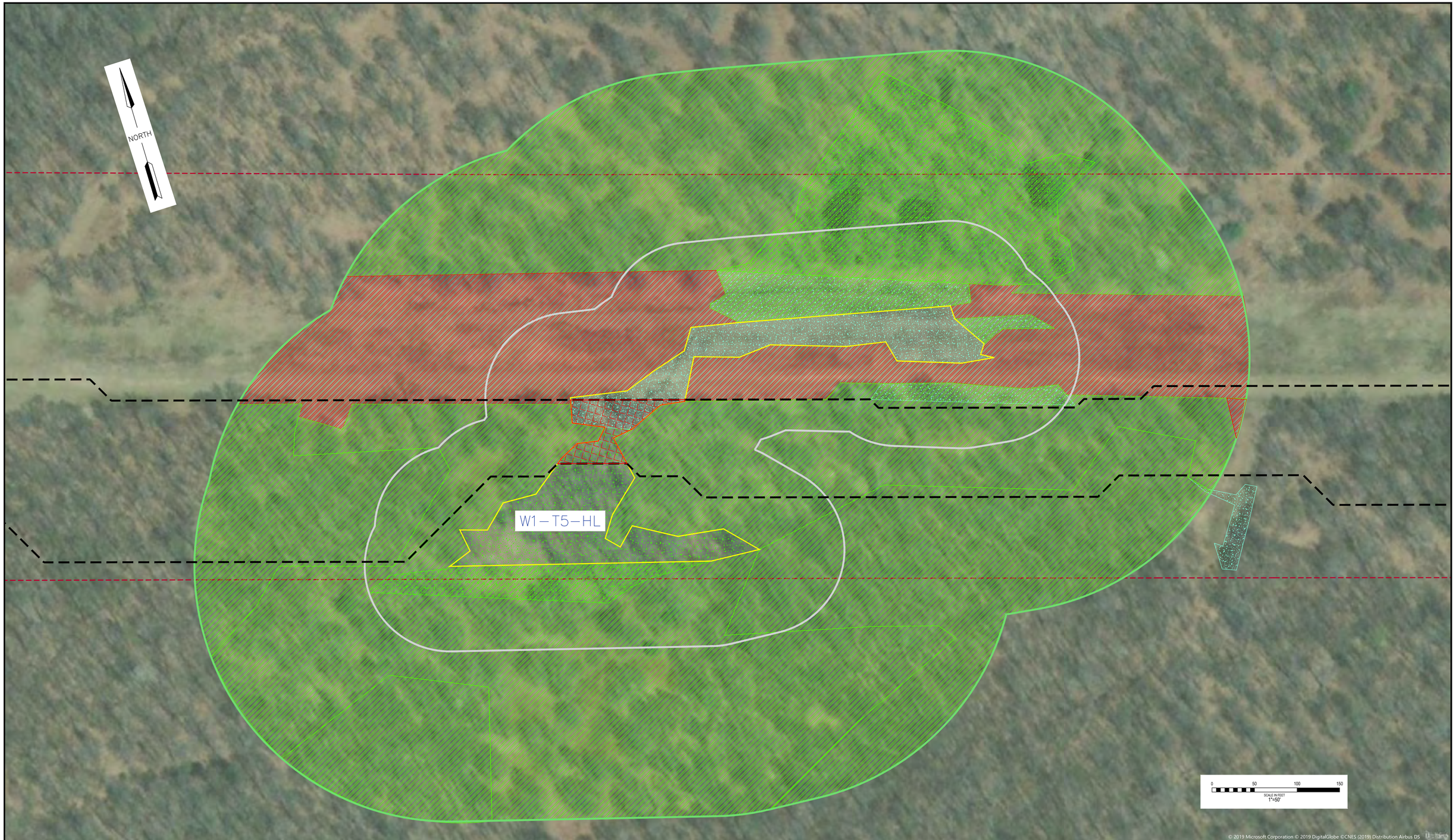
LEIDY SOUTH PROJECT
HILLTOP LOOP

WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 1 (W3-T7a-HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

DATE: 8/15/2019
DRAWN BY: CMB
CHECKED: KMC
DRAWING NO. WILLIAMS18201D001
SHEET NO. 1




LEGEND

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN–ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

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HILLTOP LOOP

WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 2 (W1–T5–HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

DATE: 8/15/2019
DRAWN BY: CMB
CHECKED: KMC
DRAWING NO. WILLIAMS18201D003
SHEET NO. 2

LEGEND

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN-ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

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WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 3 (W1-T4-HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

DATE: 8/15/2019
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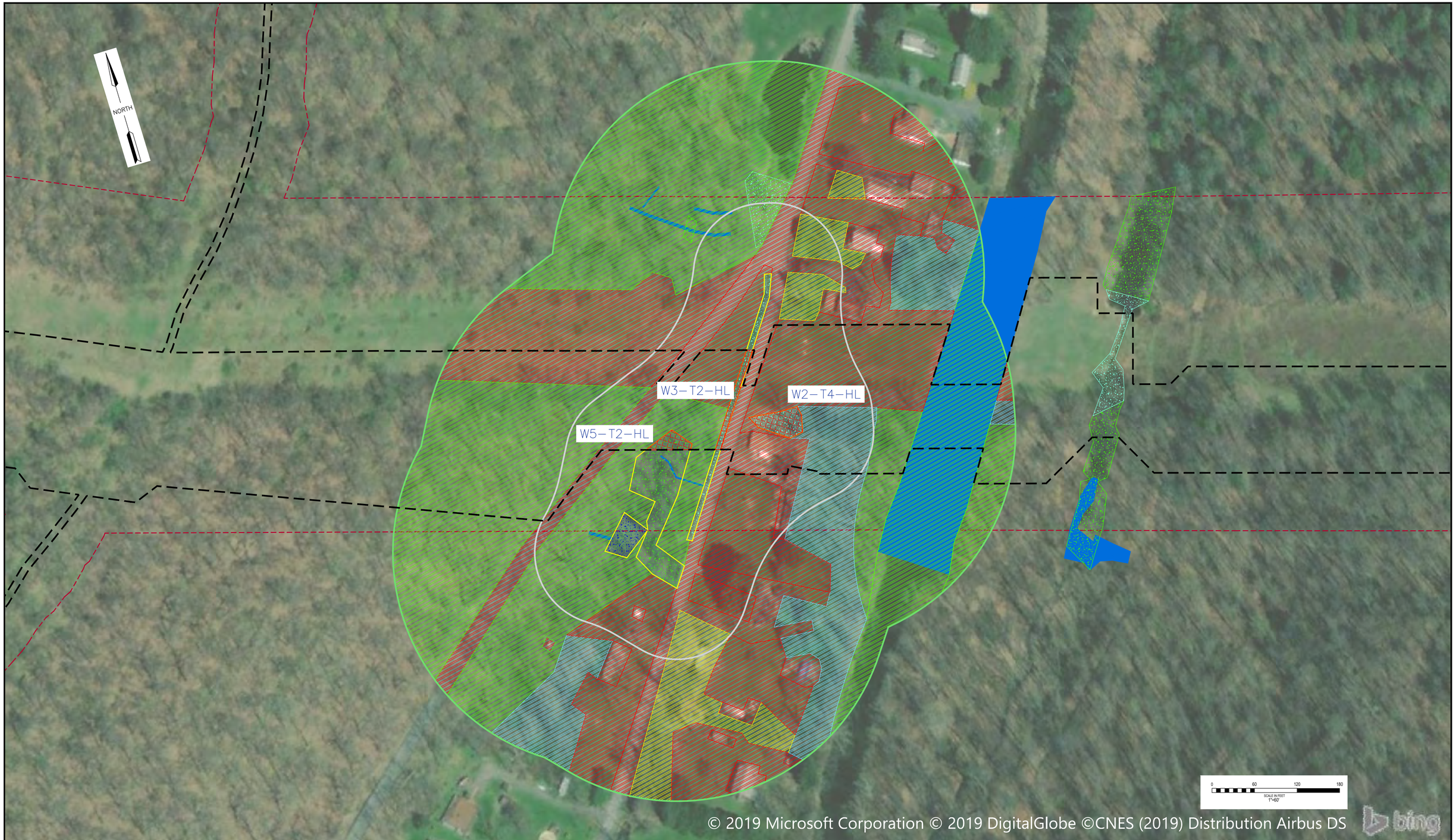
SHEET NO. 3




LEGEND

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN–ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

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| DATE | DESCRIPTIONS | APP |
|---|---|---|
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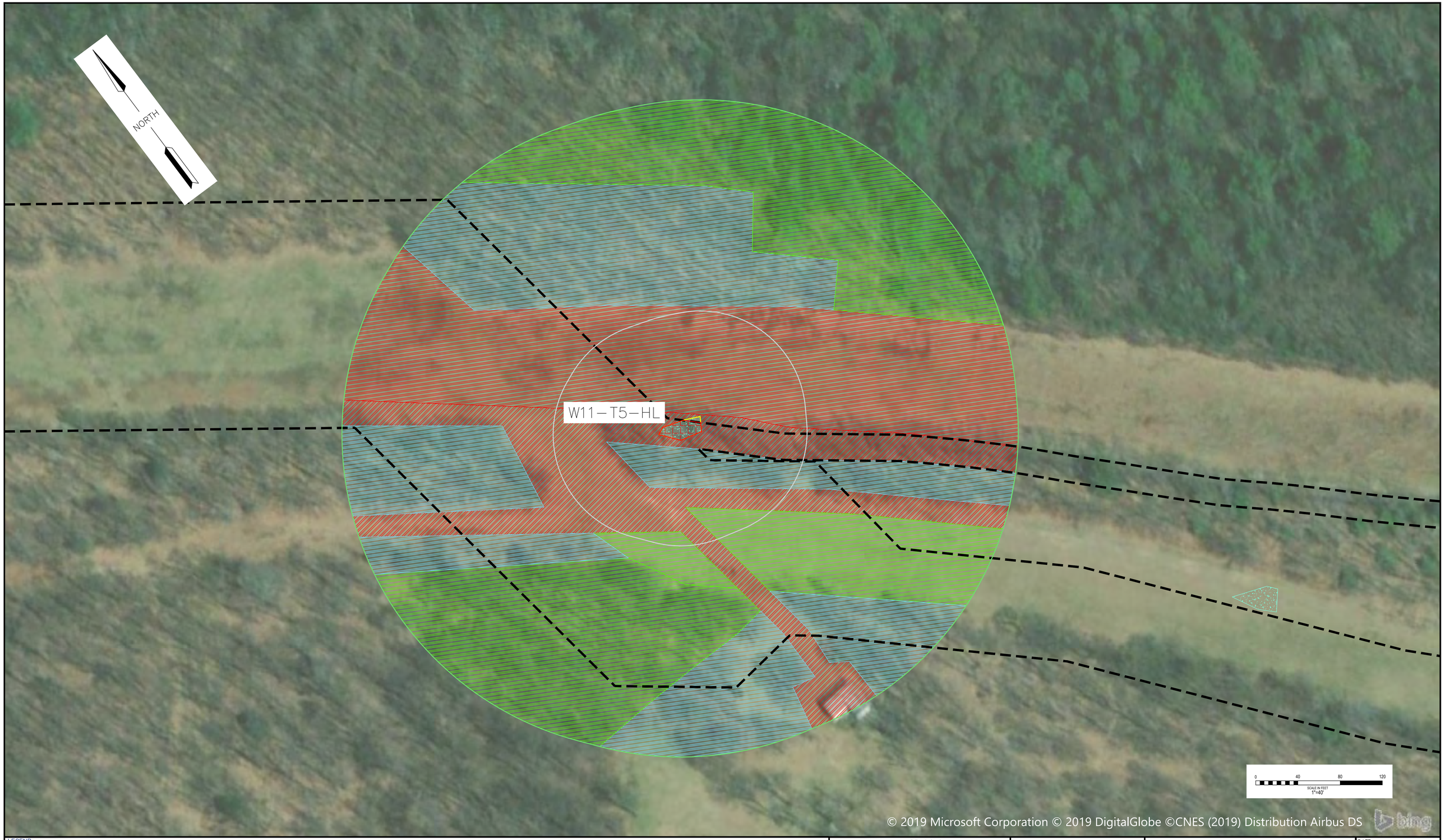
LEIDY SOUTH PROJECT
HILLTOP LOOP

WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 4 (W2–T4–HL, W3–T2–HL, & W5–T2–HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

DATE: 8/15/2019
DRAWN BY: CMB
CHECKED: KMC
DRAWING NO. WILLIAMS18201D004
SHEET NO. 4




LEGEND

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN-ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

Williams

REVISIONS

| DATE | DESCRIPTIONS | APP |
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| XX/XX/XXXX | ISSUED FOR REVIEW | KMC |

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

LEIDY SOUTH PROJECT
HILLTOP LOOP

WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 5 (W11-T5-HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

DATE: 8/15/2019
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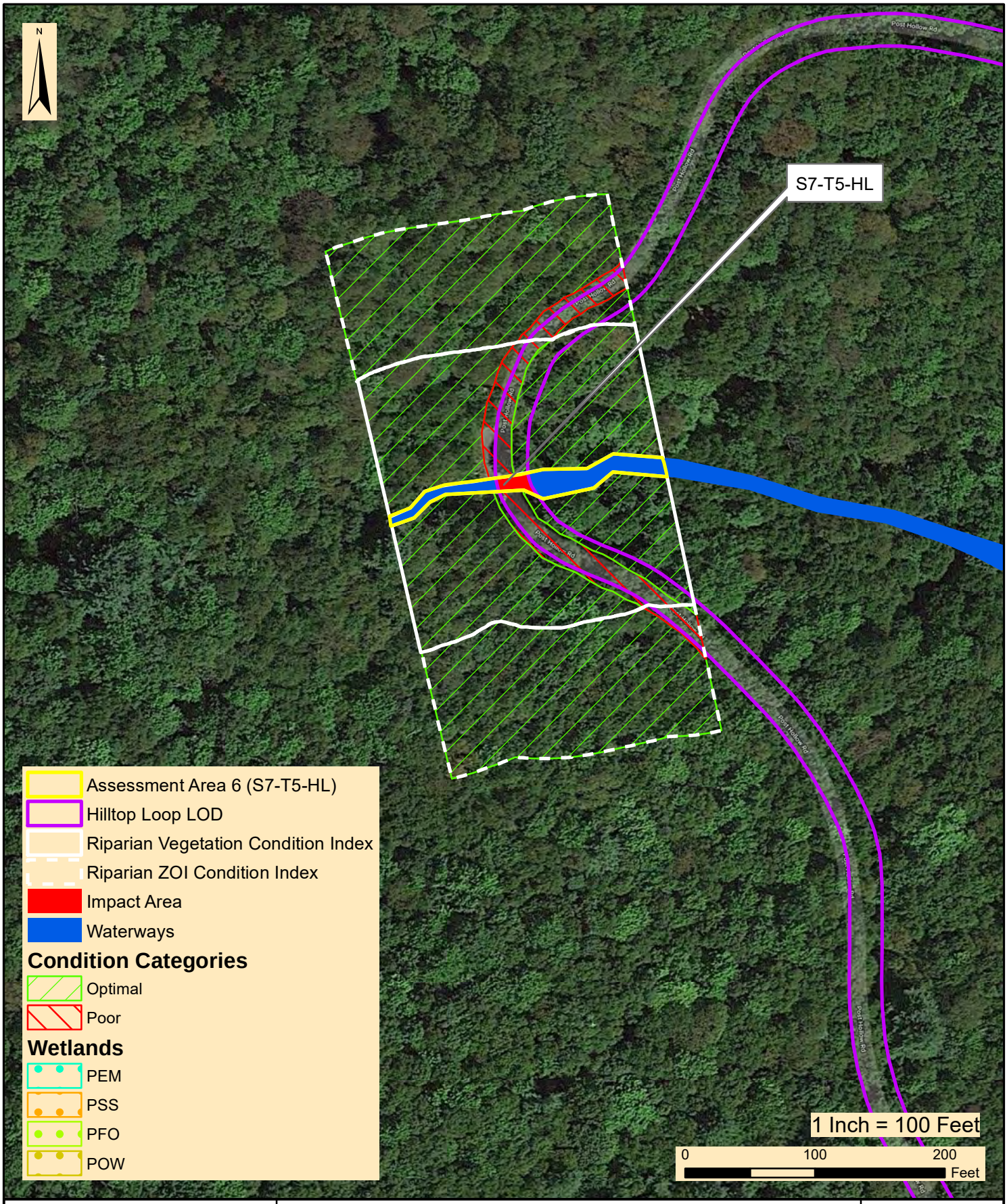


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LEIDY SOUTH PROJECT - HILLTOP LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 6 (S7-T5-HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

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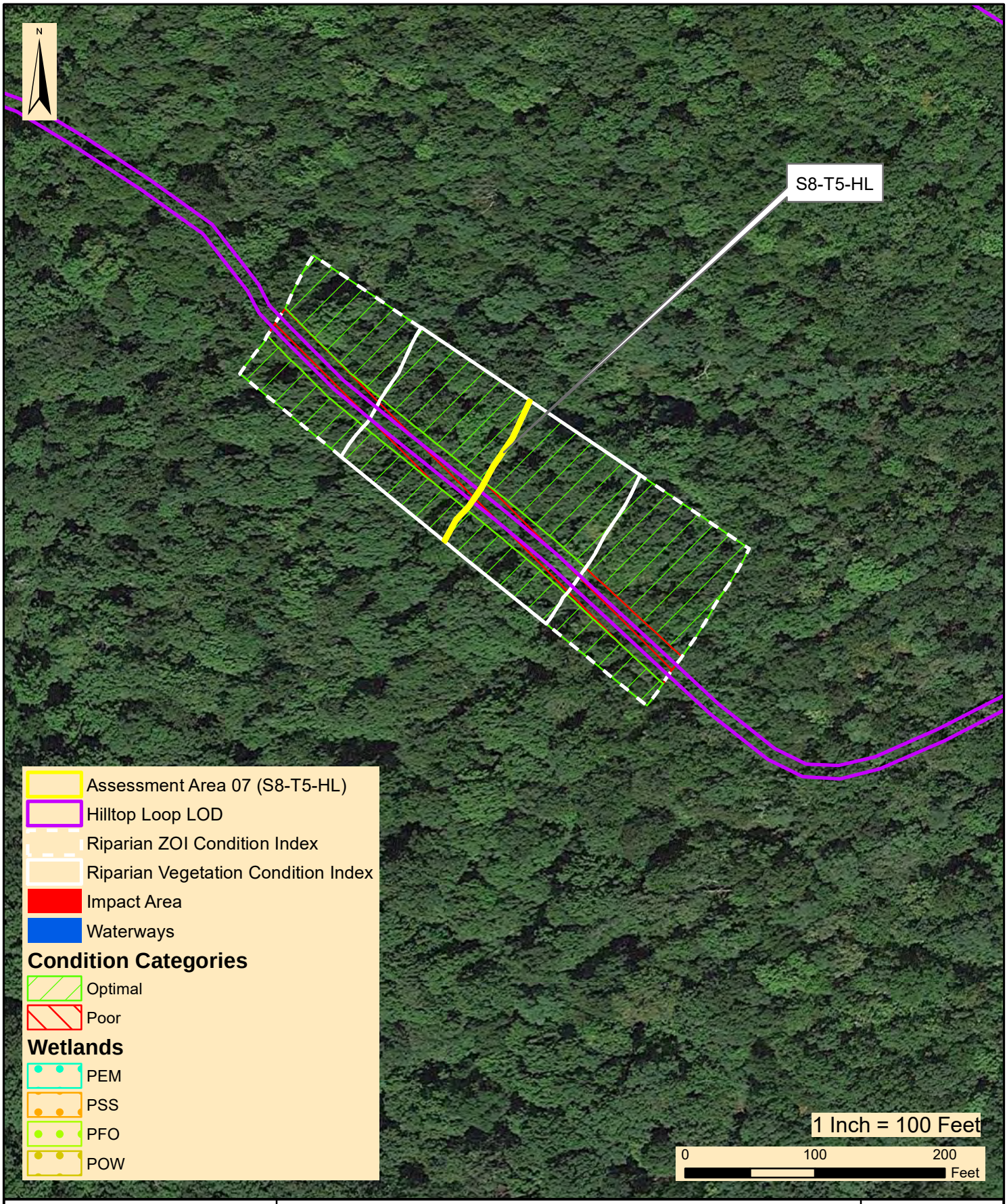


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LEIDY SOUTH PROJECT - HILLTOP LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 7 (S8-T5-HL)

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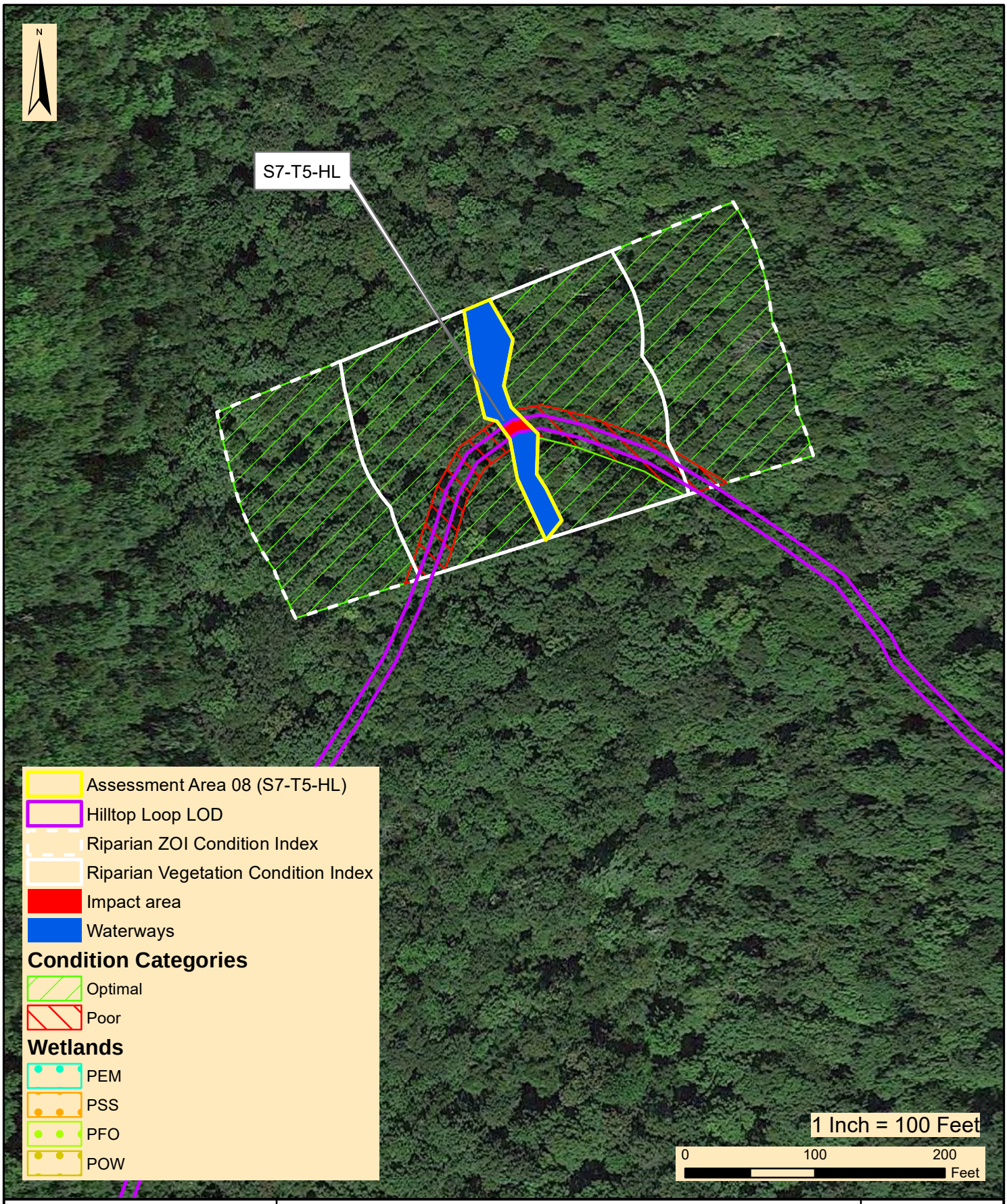


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LEIDY SOUTH PROJECT - HILLTOP LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 8 (S7-T5-HL)

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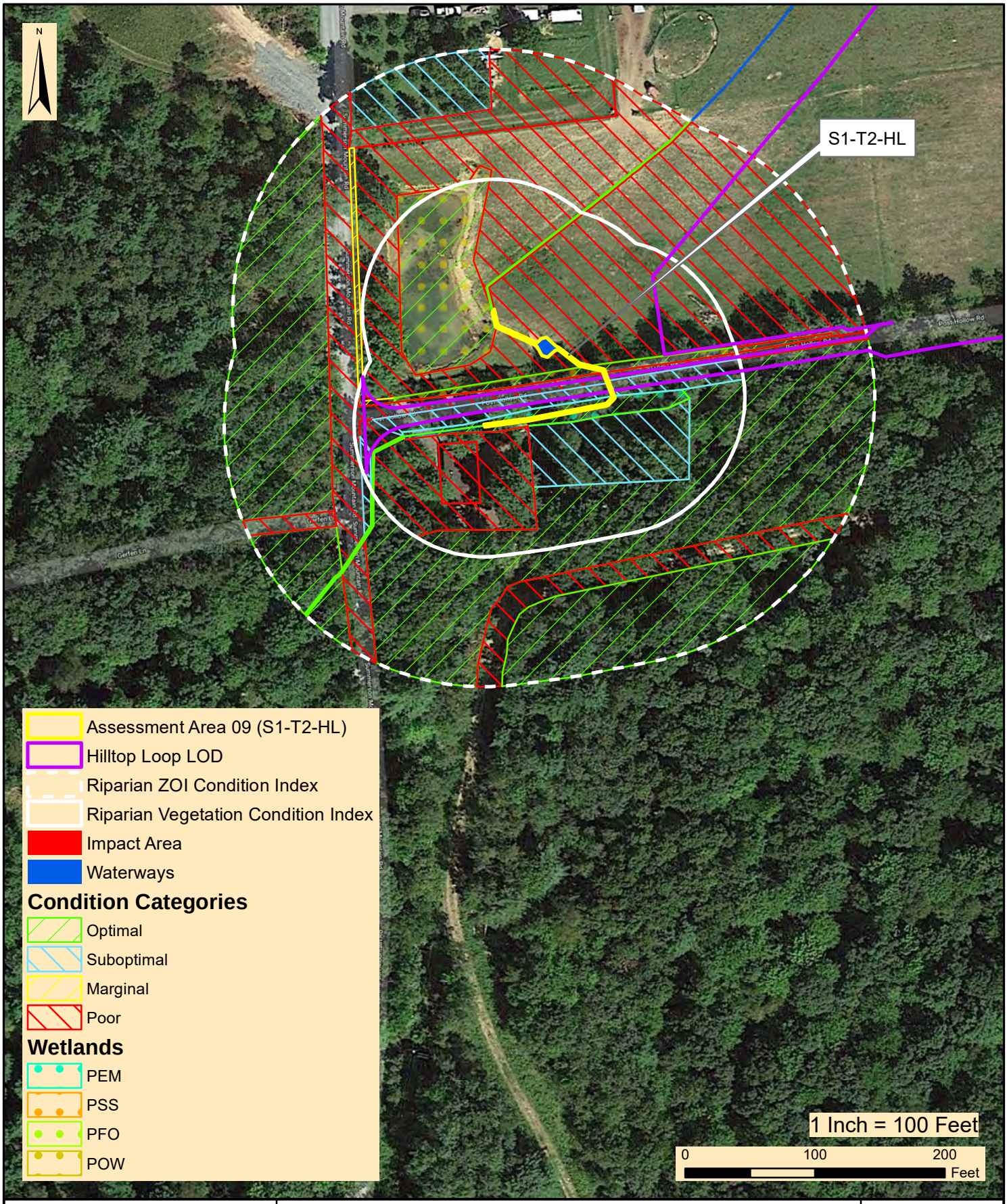


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LEIDY SOUTH PROJECT - HILLTOP LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 9 (S1-T2-HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

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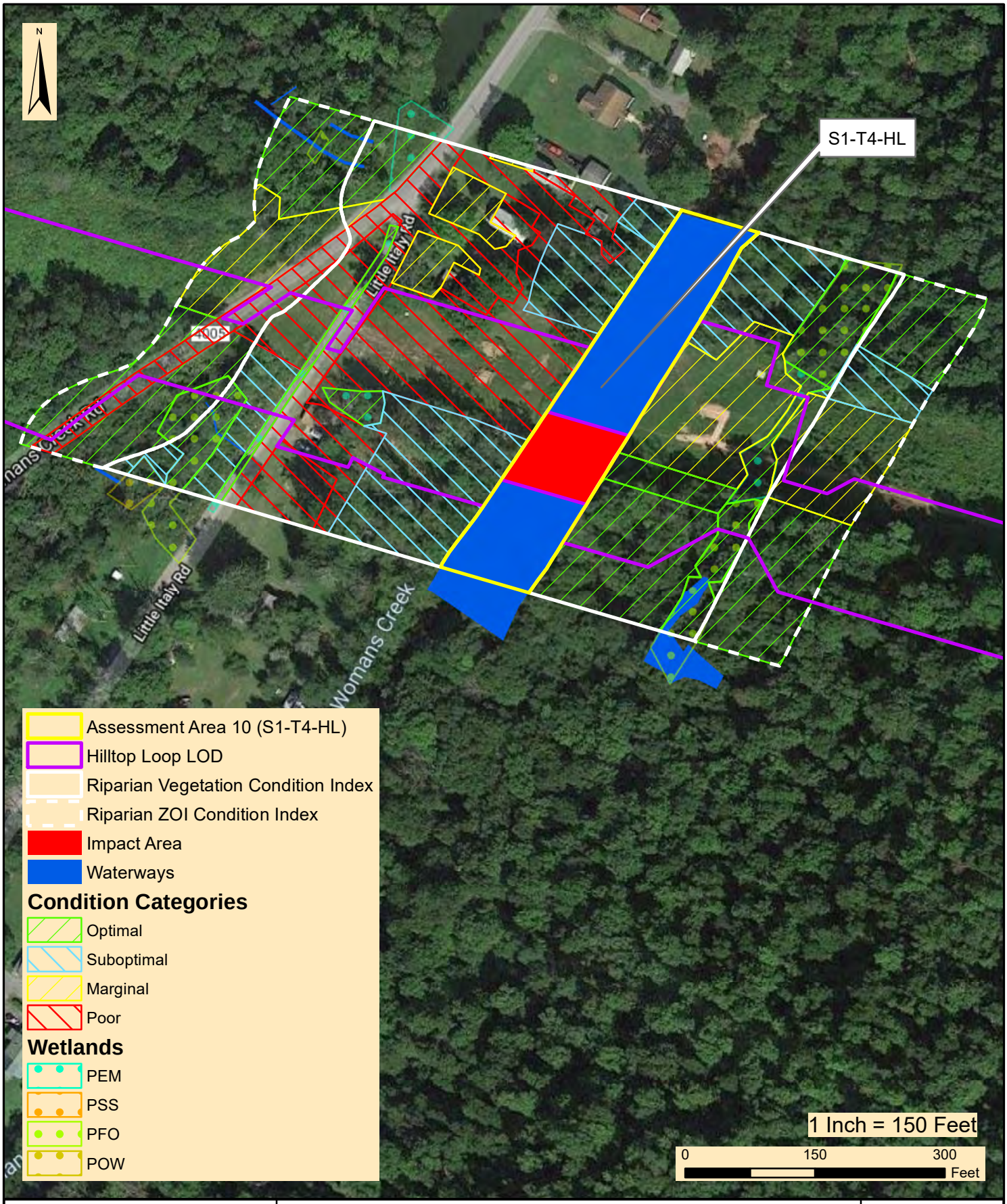


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LEIDY SOUTH PROJECT - HILLTOP LOOP

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 10 (S1-T4-HL)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

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| Date: | 08/01/2019 |
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# APPENDIX E

# HENSEL REPLACEMENT WETLAND AND WATERCOURSE DELINEATION REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX E
LEIDY LINE "D" HENSEL REPLACEMENT WETLAND AND WATERCOUSE DELINEATION REPORT

CHAPMAN AND LEIDY TOWNSHIP, CLINTON COUNTY, PENNSYLVANIA

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- 2.4 USDA/NRCS Soil Descriptions

3.0 Results

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4.0 Conclusions

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2 USDA-NRCS Soils and NWI Map
3 Wetland Delineation Key Map


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A Wetland and Water Resource Delineation Data Package

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- .... Wetland, Upland and Waterway Data Forms

B Wetland and Water Resource Summary Tables

C Pennsylvania Level 2 Rapid Assessment Report

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX E

LEIDY LINE "D" HENSEL REPLACEMENT WETLAND AND WATERCOUSE DELINEATION REPORT

LEIDY AND CHAPMAN TOWNSHIP, CLINTON COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Transco) to conduct a delineation of wetland and water resources associated with the Leidy Line "D" Hensel Replacement (Project) located in Chapman and Leidy Townships, Clinton County, Pennsylvania (Figure 1 – Project Location Map). The purpose of this investigation was to determine whether regulated wetlands and waters exist within the subject project area in accordance with U.S. Army Corps of Engineers (USACE) guidelines which as regulated under Section 404 of the Clean Water Act (CWA) and Pa Code 25 Chapter 105. This report provides information on the desktop analysis, data collected, delineation field findings, and results pertaining to wetland and water resources identified in the study area. The delineation was performed in April 2019, May 2019 and June 2019.

# 2.0 DESKTOP ANALYSIS

Prior to conducting field investigations, a review of natural resource data associated with the investigation area was completed to help establish probable areas where wetlands and watercourses could be located before conducting the onsite field investigation. The following sections outlined specific data reviewed for the investigation area.

## 2.1 USGS TOPOGRAPHIC AND LiDAR DATA

The 7.5-minute USGS quadrangles for Tamarack, Hammersley Fork, Renovo West, and Young Womans Creek, Pennsylvania, were reviewed in the vicinity of the project area. For more detailed topographic information, PAMAP LiDAR (2-foot Intervals) was reviewed to determine slope breaks and microtopography that could result in wetlands and/or waterways.

## 2.2 AERIAL PHOTOGRAPHY

Multiple sources of online accessible current and historical aerial imagery were reviewed. In particular, leaf-off aerial imagery was evaluated for saturation that may persist long enough into the growing season to create wetland conditions. Also, current flyover aerial imagery was evaluated prior to conducting surveys.

## 2.3 NATIONAL WETLAND INVENTORY

The U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) mapping within and surrounding the project area is presented in Figure 2 - USDA-NRCS Soils and NWI Map. According to NWI mapping there 15 NWI wetlands located within, or within 500 feet of, the investigation area (See Table 2-1).

| NWI Code | NWI Wetland Name | Quantity * |
|---|---|---|
| PEM1A | Palustrine, Emergent, Persistent, Temporary Flooded | 1 |
| PEM1E | Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated | 3 |
| PFO4B | Palustrine, Forested, Needle-Leaved Evergreen, Seasonally Saturated | 1 |
| PFO4E | Palustrine, Forested, Needle-Leaved Evergreen, Seasonally Flooded/Saturated | 1 |
| PSS1/FO2B | Palustrine, Scrub-Shrub, Broad-Leaved Deciduous / Forested, Needle-Leaved Deciduous, Seasonally Saturated | 1 |
| PSS1A | Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Temporary Flooded | 2 |
| PSS1E | Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/ Saturated | 3 |
| PSS3/FO2B | Palustrine, Scrub-Shrub, Broad-Leaved Evergreen / Forested, Needle-Leaved Deciduous, Seasonally Saturated | 1 |
| PSS3B | Palustrine, Scrub-Shrub, Broad-Leaved Evergreen, Seasonally Saturated | 1 |
| PUBFb | Palustrine, Unconsolidated Bottom, Semi-permanently Flooded, Beaver | 1 |
| *Located in, or within 500 ft. of the Investigation Area | | |

Table 2-1. NWI Wetlands

## 2.4 USDA/NRCS SOIL DESCRIPTIONS

The soil associations onsite are identified through the soil map units mapped by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) in the Soil Survey of Clinton County, Pennsylvania. In addition, the hydric soils list for Clinton County was reviewed to determine if these soils are Hydric Soils or contain Hydric Inclusion. There are 19 soil mapping units located within the investigation area. Each soil series and their hydric rating is provided in Table 2-1.

| Soil Mapping Unit | Map Unit Name | Slope (%) | Hydric Soil/ Hydric Inclusion |
|---|---|---|---|
| At | Atkins silt loam, frequently flooded | 0 to 3 | Yes |
| Bb | Barbour-Craigsville Complex | - | Yes |
| CaB | Calvin channery silt loam | 3 to 8 | No |
| CfB | Clymer channery loam, extremely stony | 0 to 8 | No |
| CgB | Clymer-Cookport channery loams, extremely stony | 0 to 8 | No |
| CpB | Cookport channery loam, extremely stony | 0 to 8 | Yes |
| CpD | Cookport channery loam, extremely stony | 8 to 25 | No |
| Fr | Freetown mucky pete | - | Yes |
| HkE | Hazleton channery sandy loam, rubbly | 25 to 80 | No |
| HmD | Hazleton-Clymer channery loams, extremely stony | 8 to 25 | No |
| HoF | Hazelton-Laidig complex, extremely stony | 25 to 50 | No |
| HuB | Hustontown silt loam | 3 to 8 | No |
| HuD | Hustontown silt loam | 15 to 25 | No |
| MhD | Meckesville channery loam, very stony | 8 to 25 | No |
| RaF | Rock outcrop-Rubble land complex | 50 to 90 | No |
| UnB | Ungers loam | 3 to 8 | No |

| Soil Mapping Unit | Map Unit Name | Slope (%) | Hydric Soil/ Hydric Inclusion |
|---|---|---|---|
| UpF | Ungers-Meckesville complex, extremely stony | 25 to 50 | No |
| WeB | Wharton silt loam, very stony | 0 to 8 | No |
| WgB | Wharton-Cookport complex, very stony | 0 to 8 | Yes |

Table 2-2: Soil Mapping Unit and Hydric Soils Listing

## 3.0 RESULTS

After the completion of a desktop analysis, a formal wetland delineation was completed. Areas exhibiting the potential for regulated wetlands and waters were evaluated to determine whether they satisfied the USACE and/or PADEP requirements. Attachment A includes specific information for each resource including: wetland delineation mapping, photographic documentation, and data forms. Attachment B – Wetland and Water Resource Summary Tables, provides specific information for each resource identified within the investigation area. The Pennsylvania Level 2 Rapid Assessment Report is provided in Attachment C. The following sections provide a brief summary of the resources identified within the investigation area.

### 3.1 WETLANDS

In total, 38 wetlands were identified during the delineation. Most of the wetlands identified had been previously impacted during past projects within the existing ROW. Wetland were defined as either “Other” or “Exceptional Value” based on Pa Code Title 25, Chapter 105.17 – Wetlands. Approximately 617,146 square feet of PEM wetlands, 877,957 square feet of palustrine scrub-shrub (PSS) wetlands, 1,899,520 square feet of palustrine forested (PFO) wetlands, and 2,129 square feet of palustrine open water (POW) wetlands were identified.

### 3.2 WATERWAYS

In total, 37 waterways were identified during the delineation. Many of the waterways identified have been previously impacted during past projects within the existing ROW. Approximately 4,962 square feet of ephemeral channels, 11,505 square feet of intermittent channels, and 108,286 square feet of perennial channels were identified.

## 4.0 CONCLUSIONS

Based on the results of the field investigation 3,396,752 square feet of wetlands and 124,753 square feet of stream channel were identified within the investigation area. Any impacts to the identified resources would require authorization under PADEP and USACE guidelines.

## 5.0 REFERENCES


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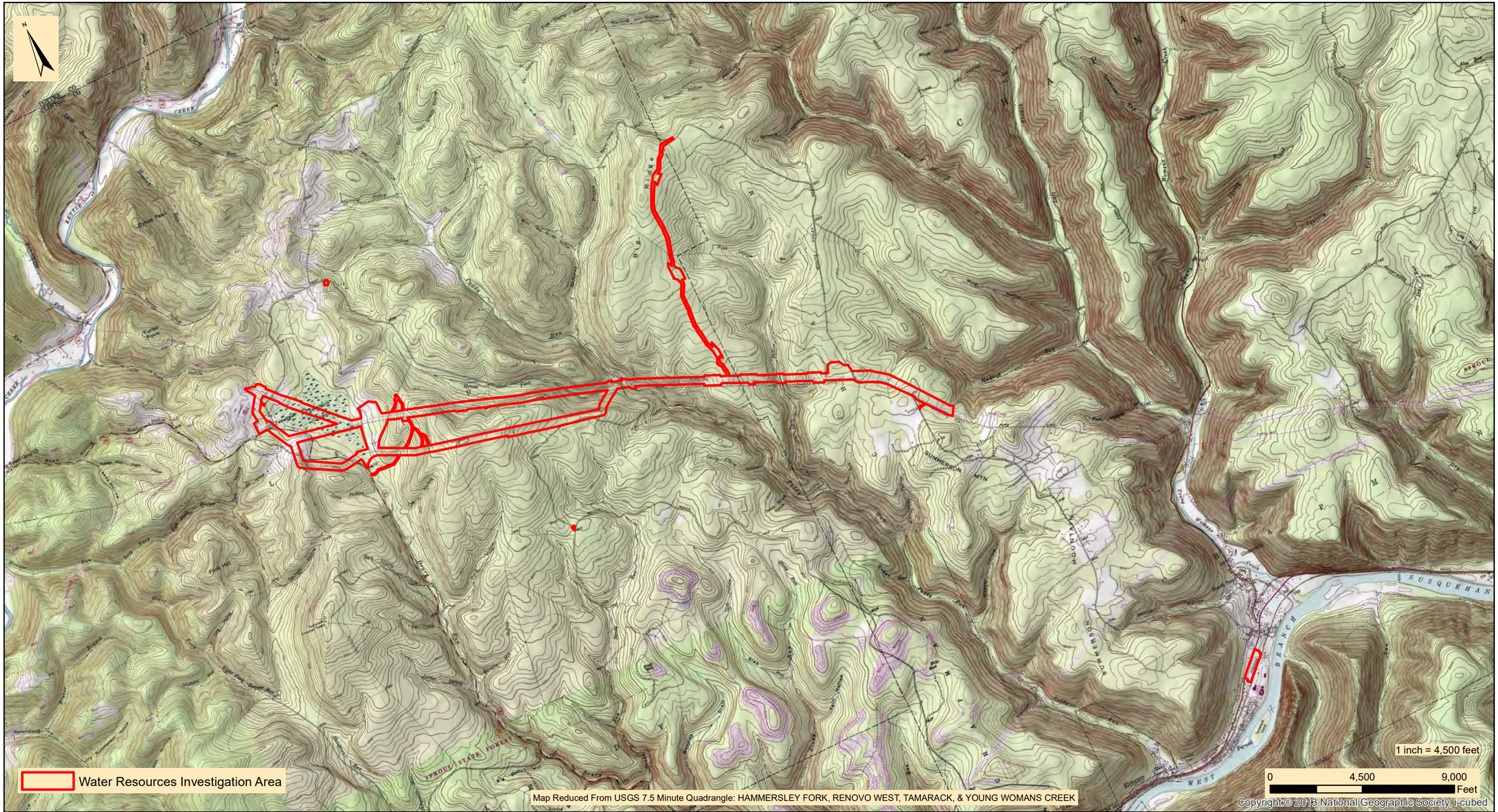
FIGURES

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

### PROJECT LOCATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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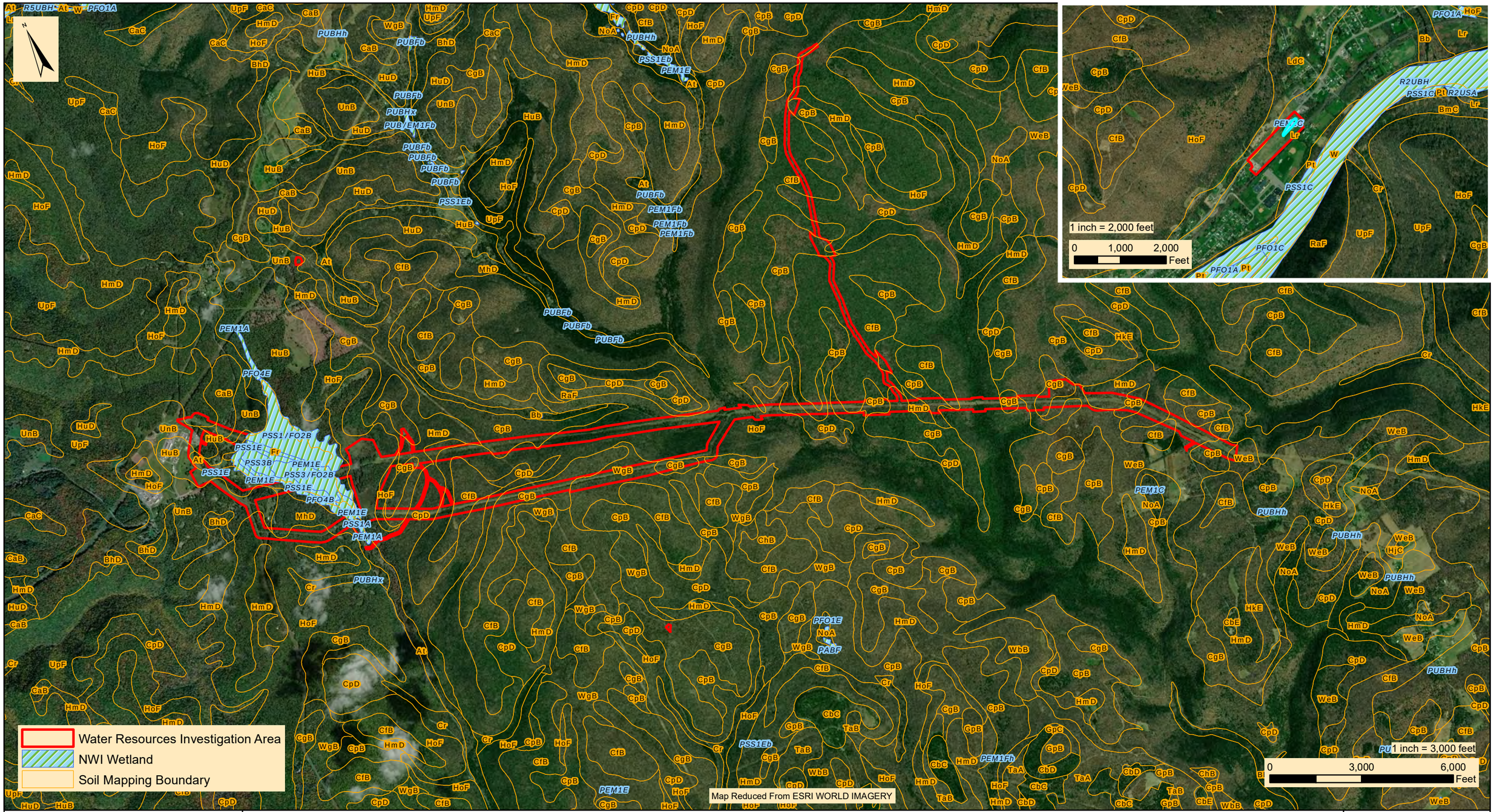


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## LEIDY SOUTH PROJECT
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### USDA-NRCS SOILS AND NWI MAP

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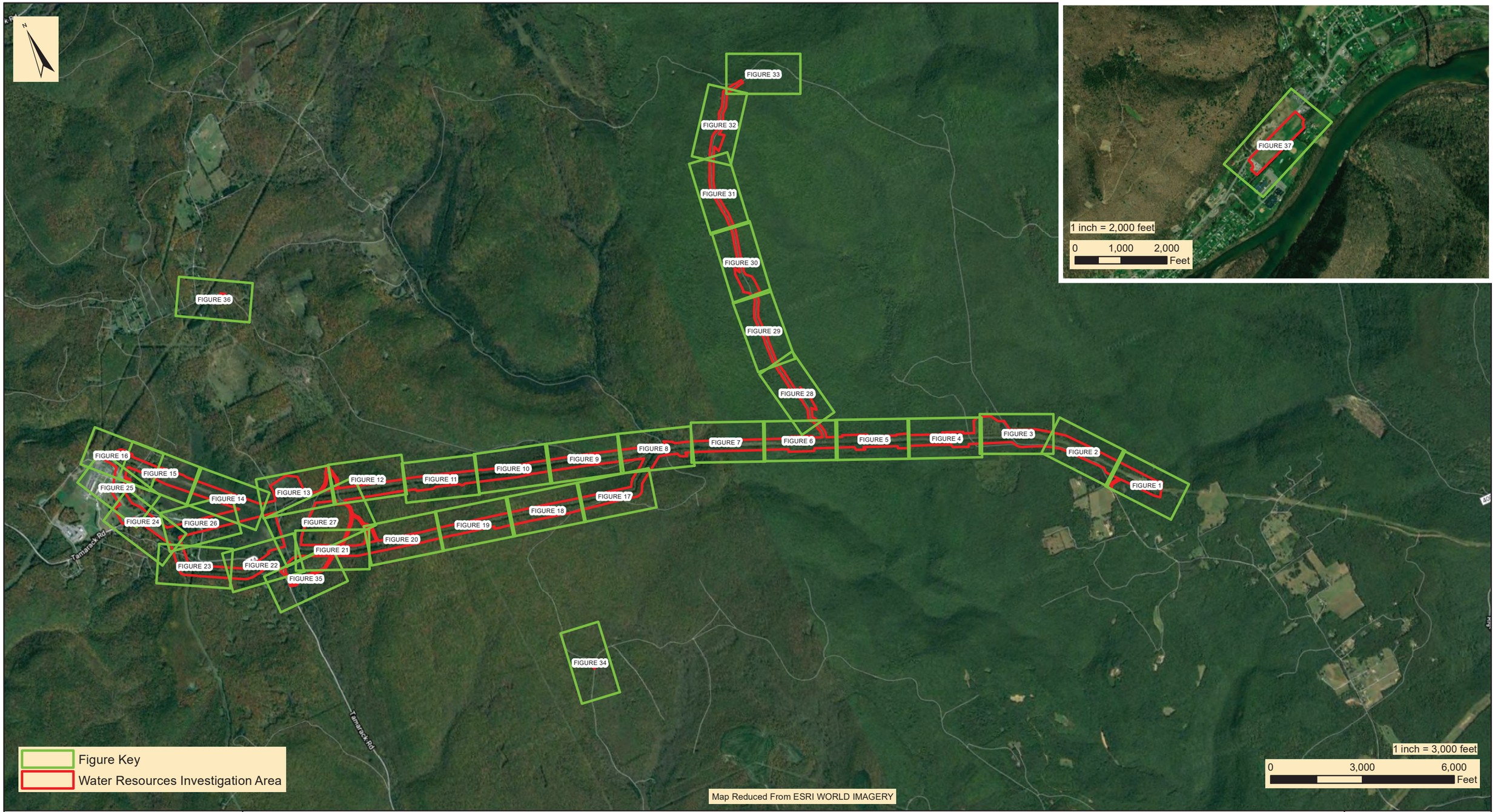


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## LEIDY SOUTH PROJECT
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## WETLAND DELINEATION KEY MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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ATTACHMENT A

WETLAND AND WATER RESOURCE DELINEATION DATA PACKAGE

WATER RESOURCES DELINEATION MAP

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## LEIDY SOUTH PROJECT
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## WATER RESOURCES DELINEATION MAP

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## WATER RESOURCES DELINEATION MAP

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

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## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

### WATER RESOURCES DELINEATION MAP

CHAPMAN & LEIDY TOWNSHIPS | CLINTON COUNTY | PENNSYLVANIA

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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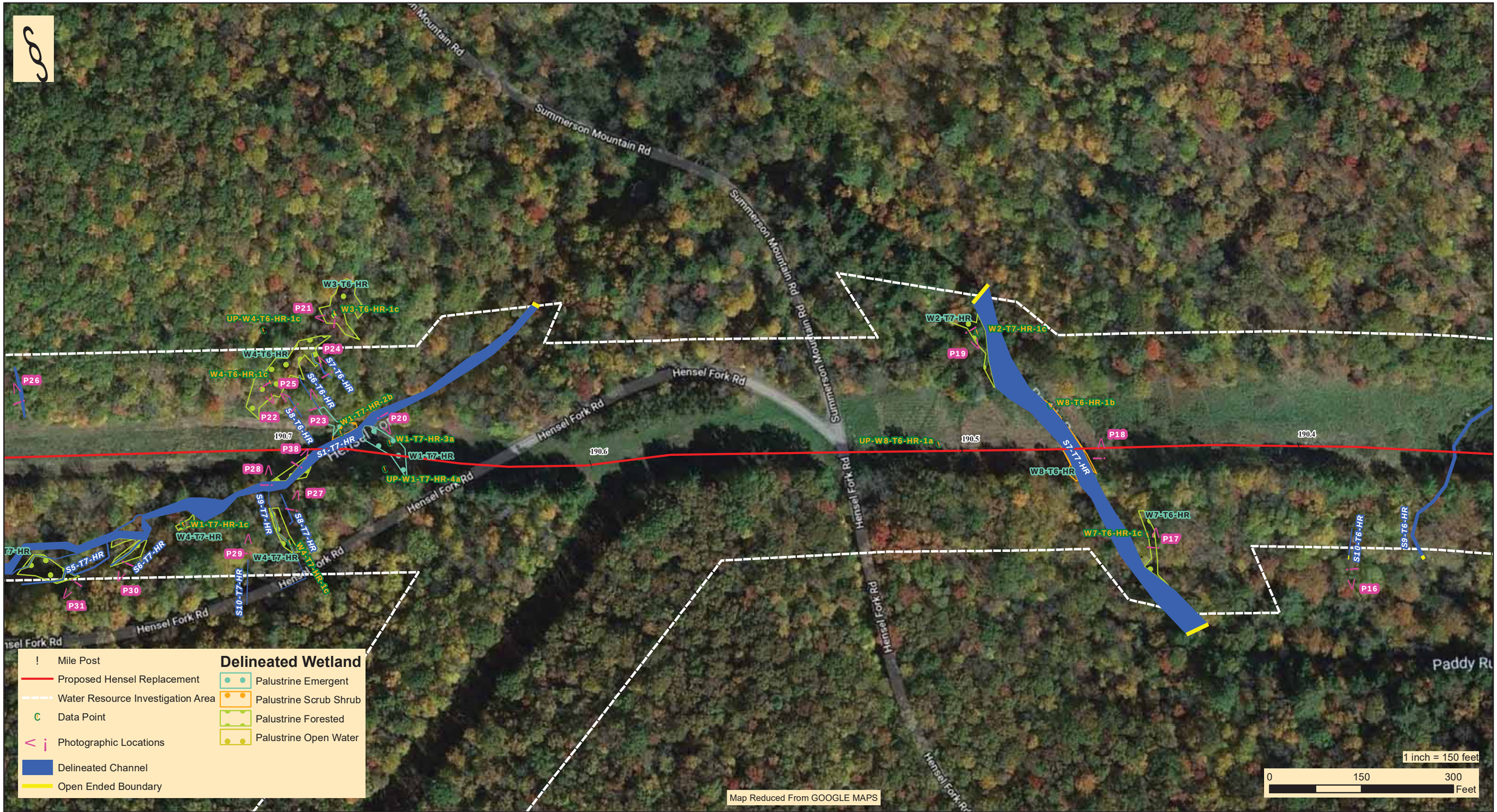



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## LEIDY SOUTH PROJECT
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## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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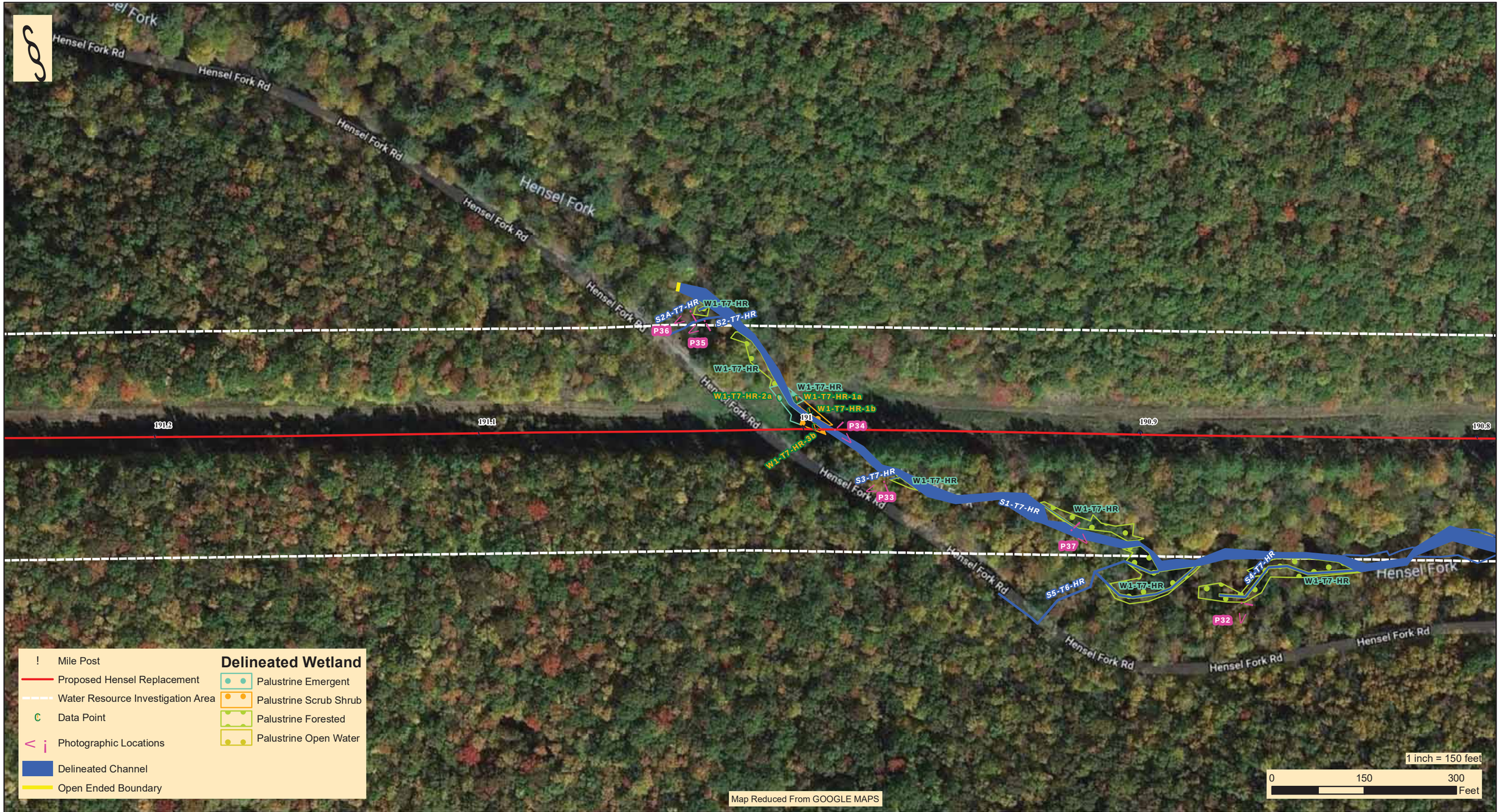


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## LEIDY SOUTH PROJECT
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## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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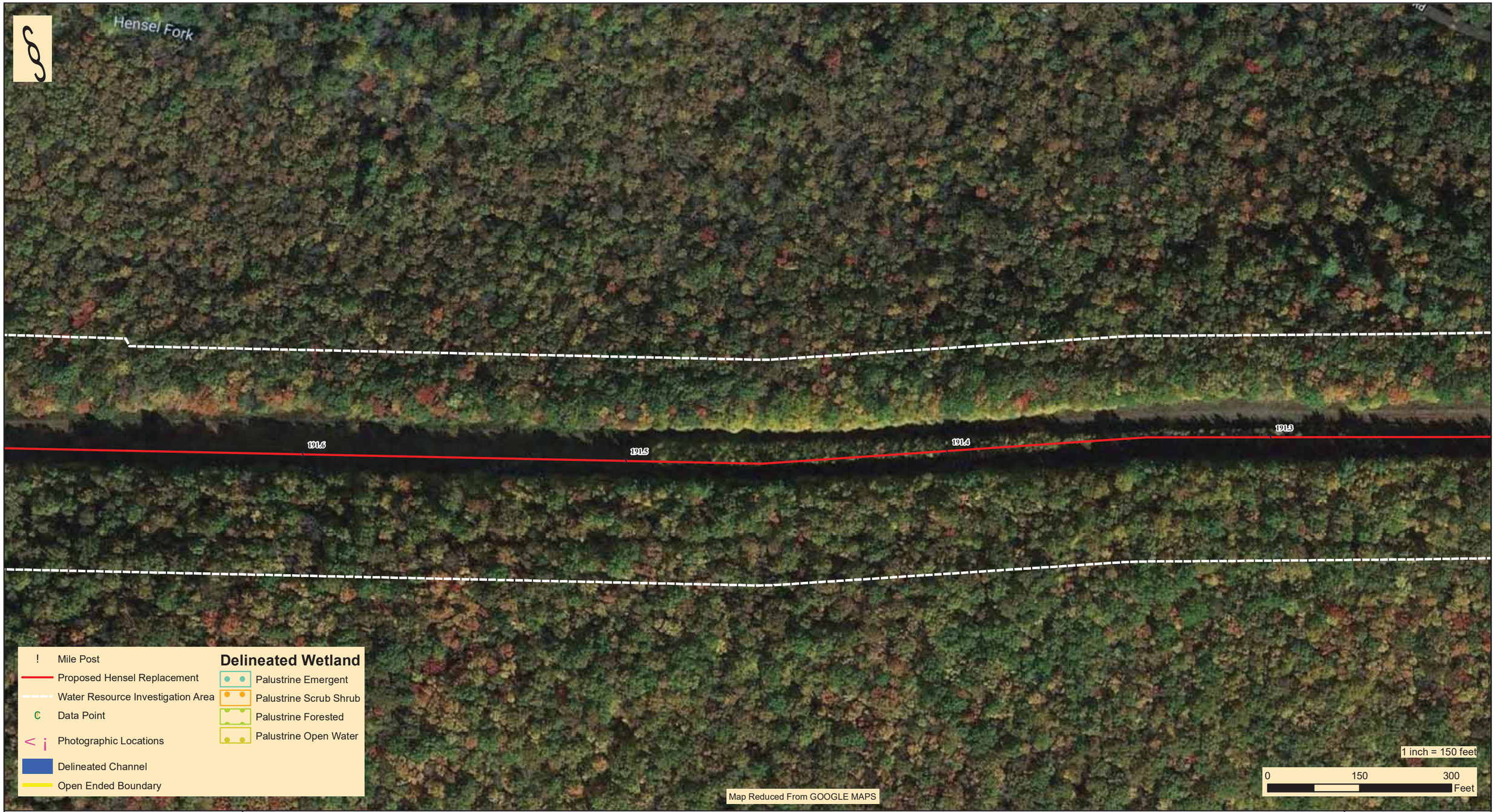


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## WATER RESOURCES DELINEATION MAP

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| Drawn By: | BWH |
| Figure Number: | 3-10 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_11 |
| Drawn By: | BWH |
| Figure Number: | 3-11 |

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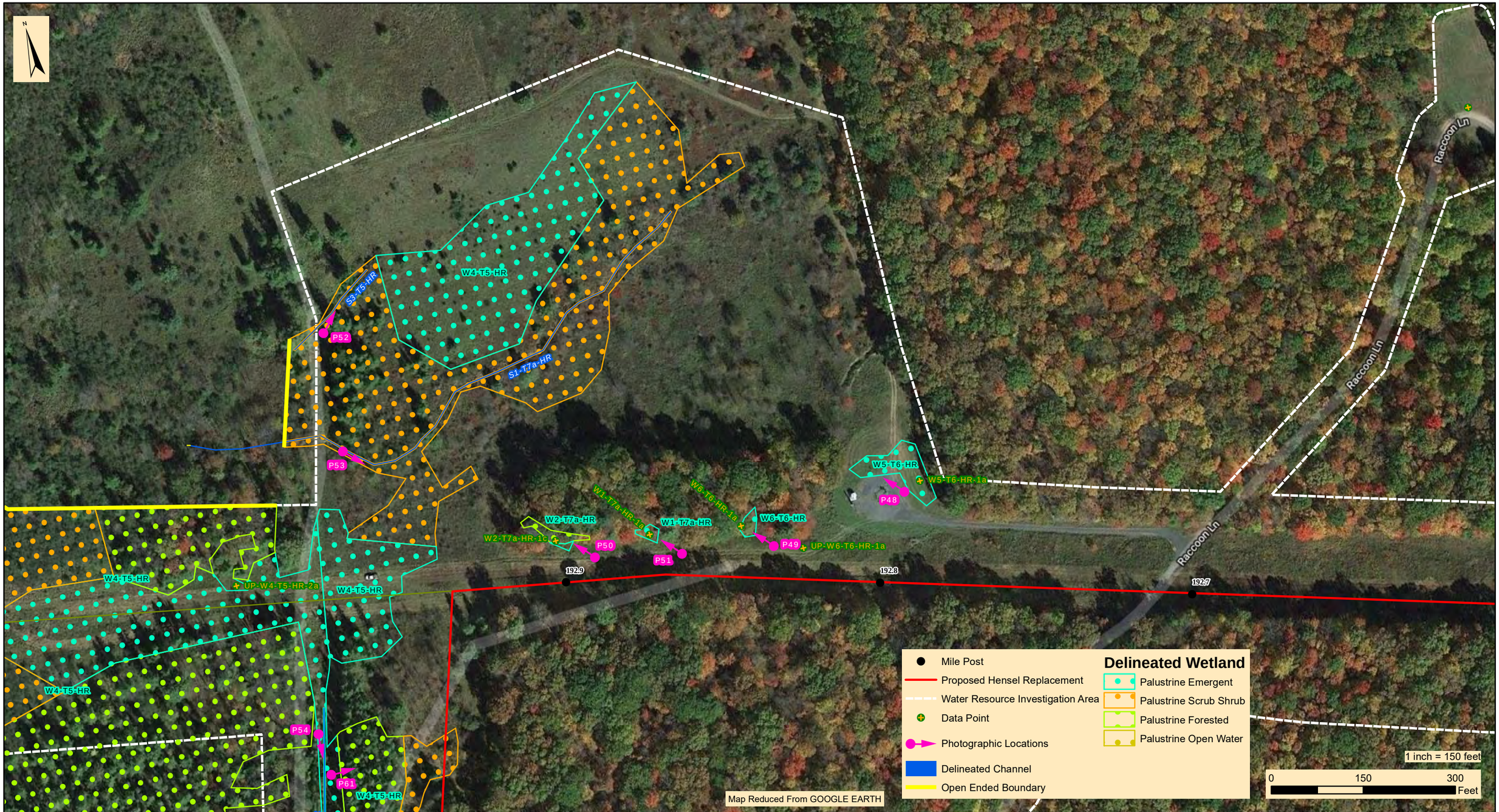
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_12 |
| Drawn By: | BWH |
| Figure Number: | 3-12 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

### WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_13 |
| Drawn By: | BWH |
| Figure Number: | 3-13 |

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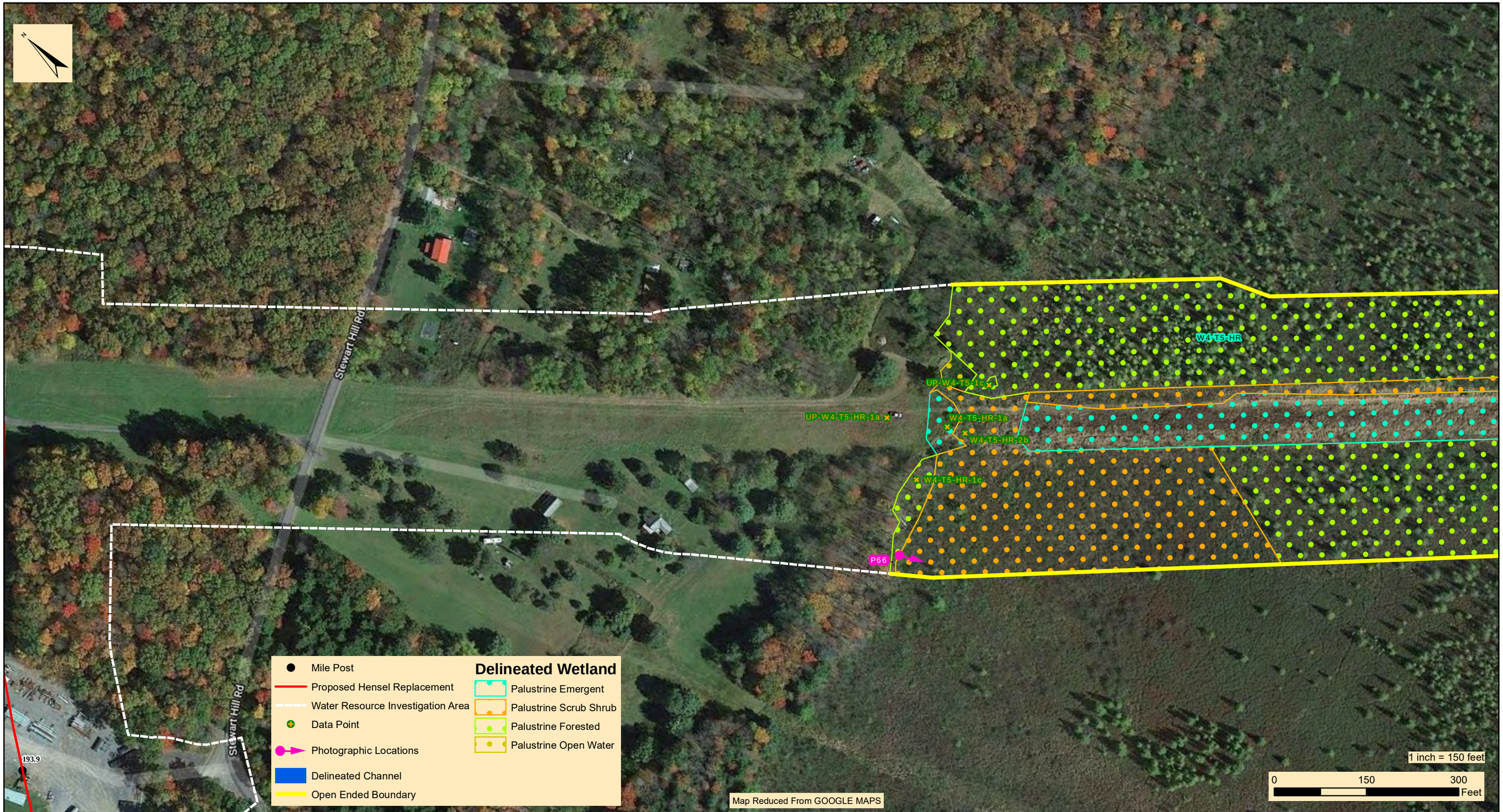
## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_14 |
| Drawn By: | BWH |
| Figure Number: | 3-14 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_15 |
| Drawn By: | BWH |
| Figure Number: | 3-15 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

### WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_16 |
| Drawn By: | BWH |
| Figure Number: | 3-16 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_17 |
| Drawn By: | BWH |
| Figure Number: | 3-17 |

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## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_18 |
| Drawn By: | BWH |
| Figure Number: | 3-18 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

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| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_19 |
| Drawn By: | BWH |
| Figure Number: | 3-19 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
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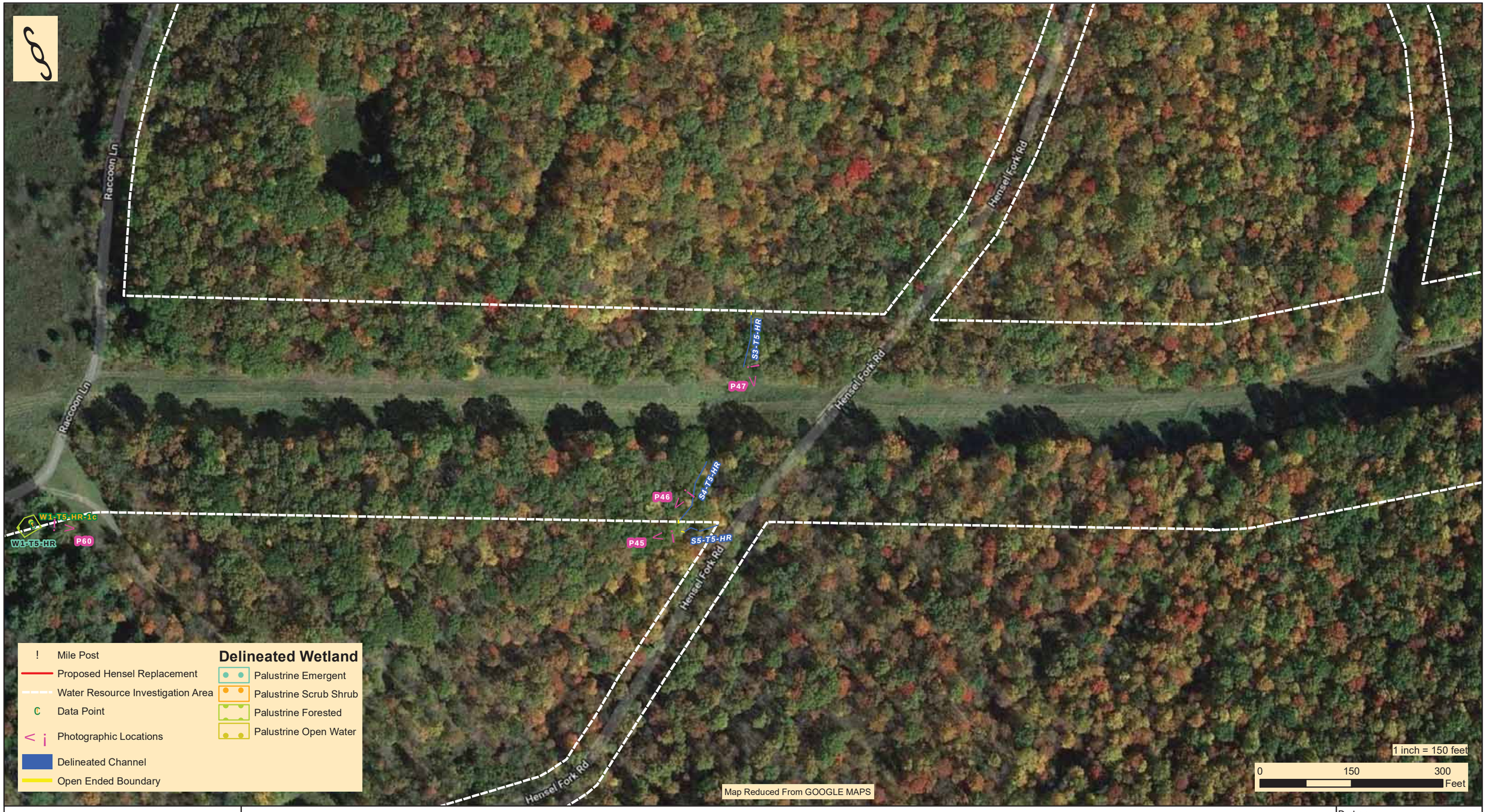


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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
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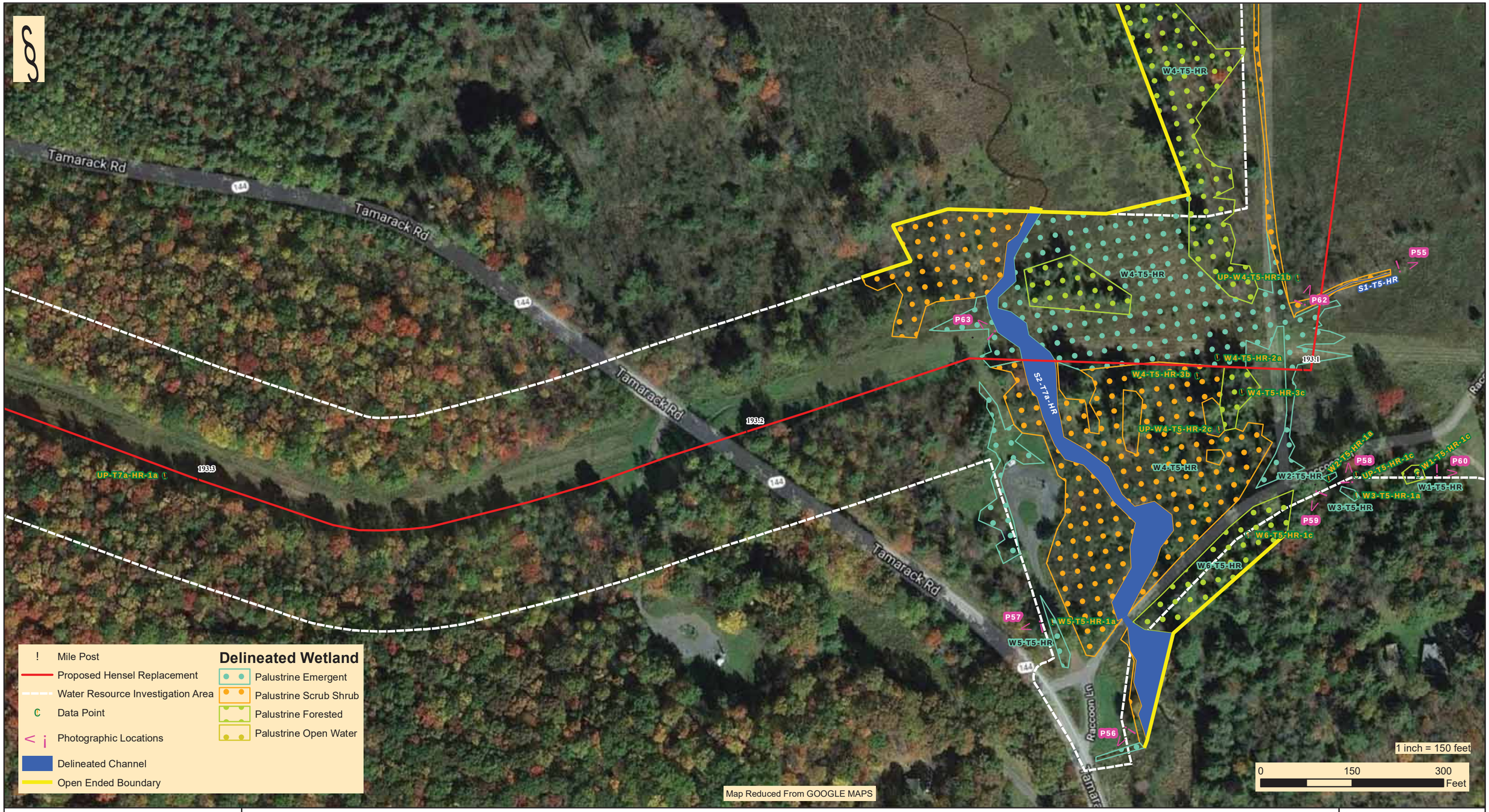



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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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|---|---|
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| WHM DRAWING NUMBER: | WILLIAMS200B003_22 |
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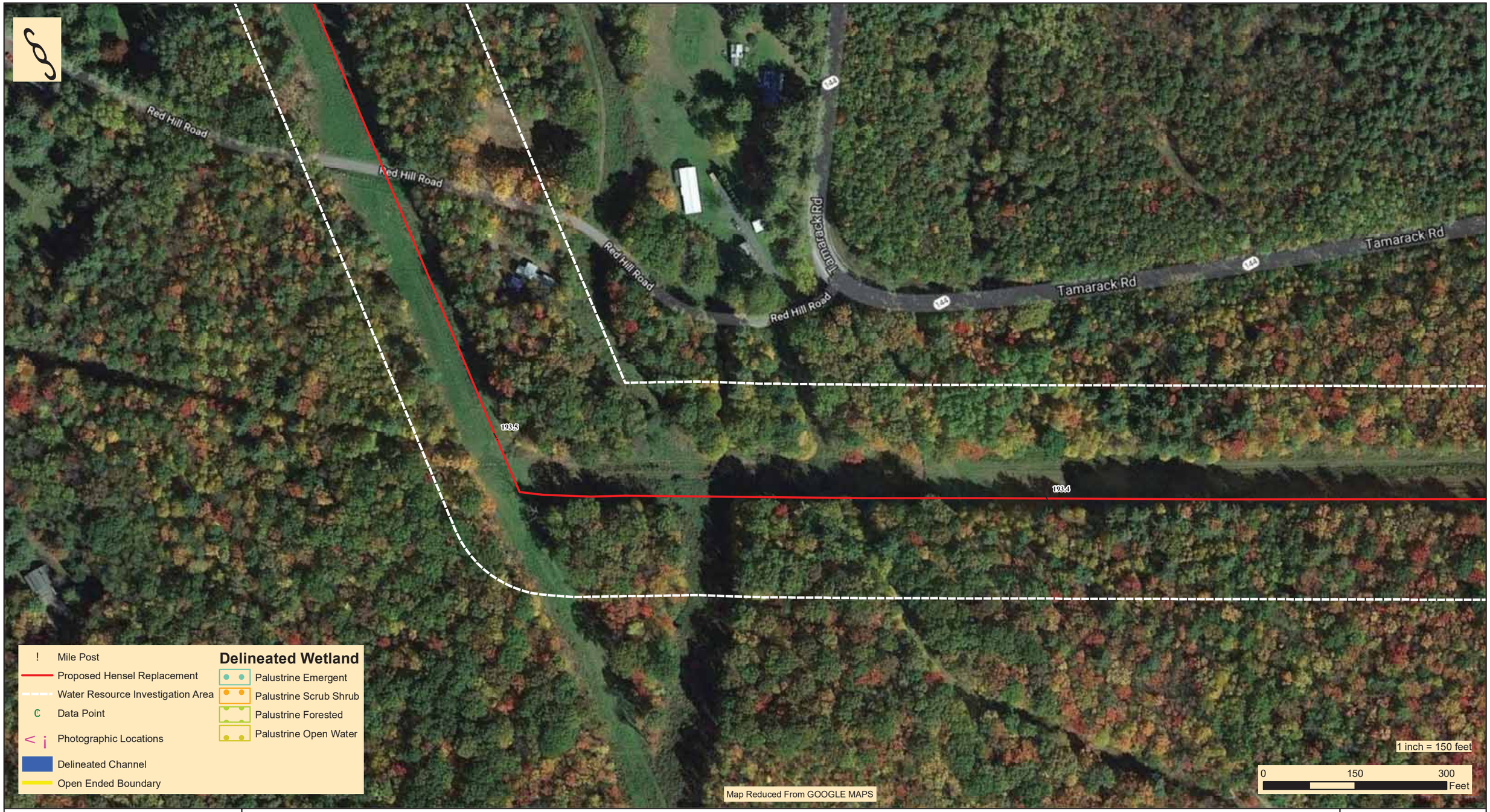
| Figure Number: | 3-22 |

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## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
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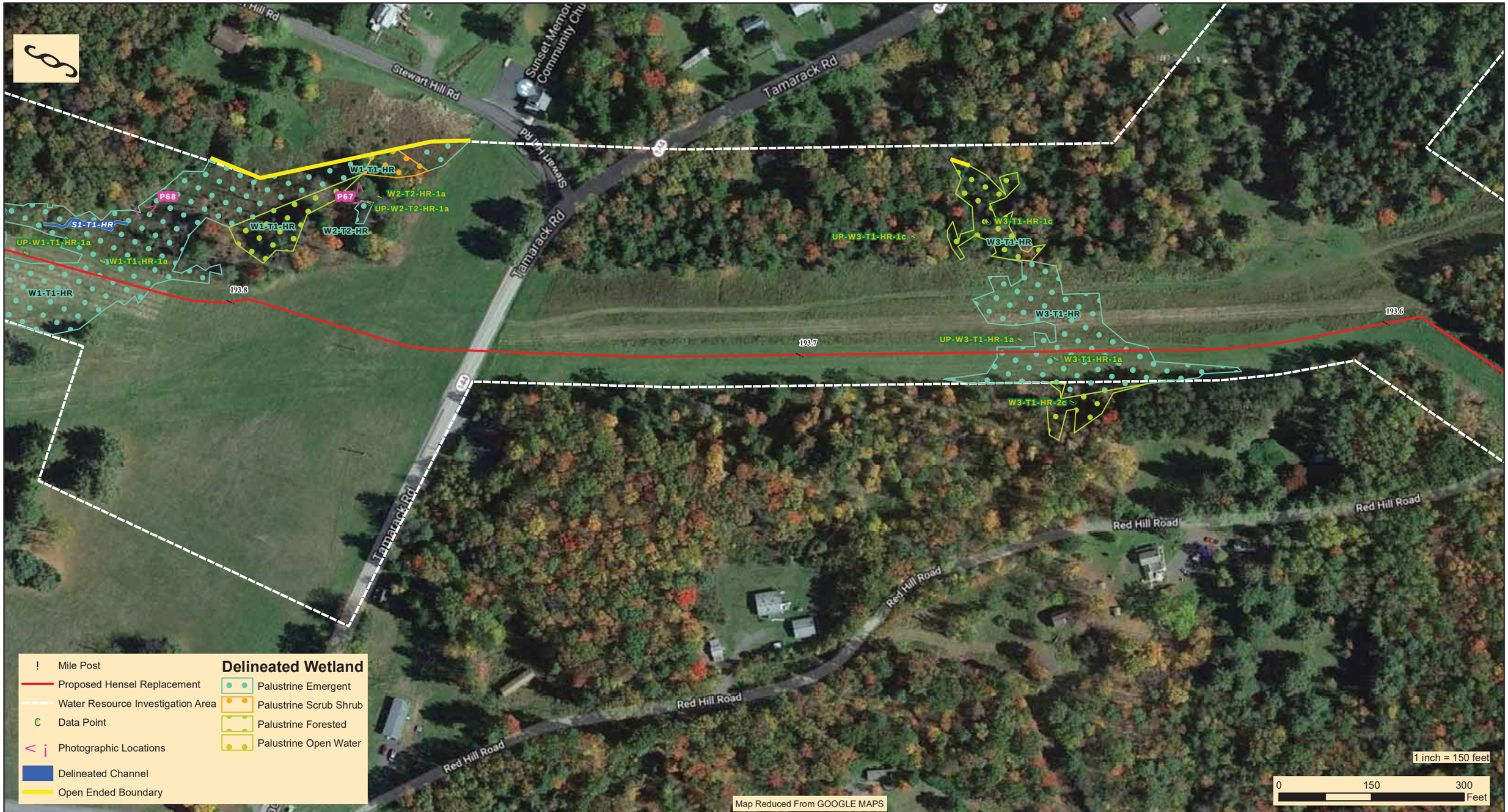
| Figure Number: | 3-23 |

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## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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|---|---|
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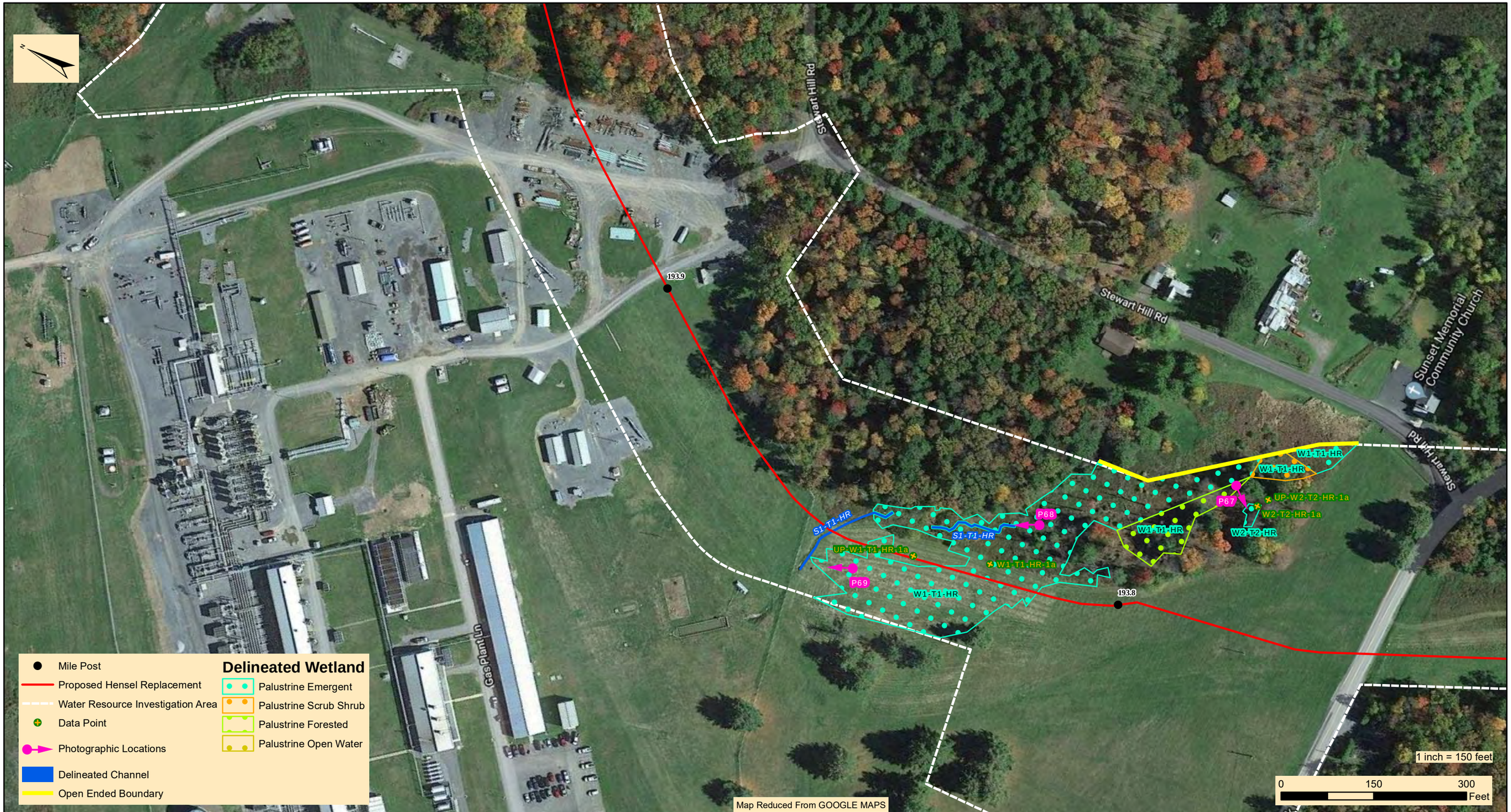


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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

### WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_25 |
| Drawn By: | BWH |
| Figure Number: | 3-25 |

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## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
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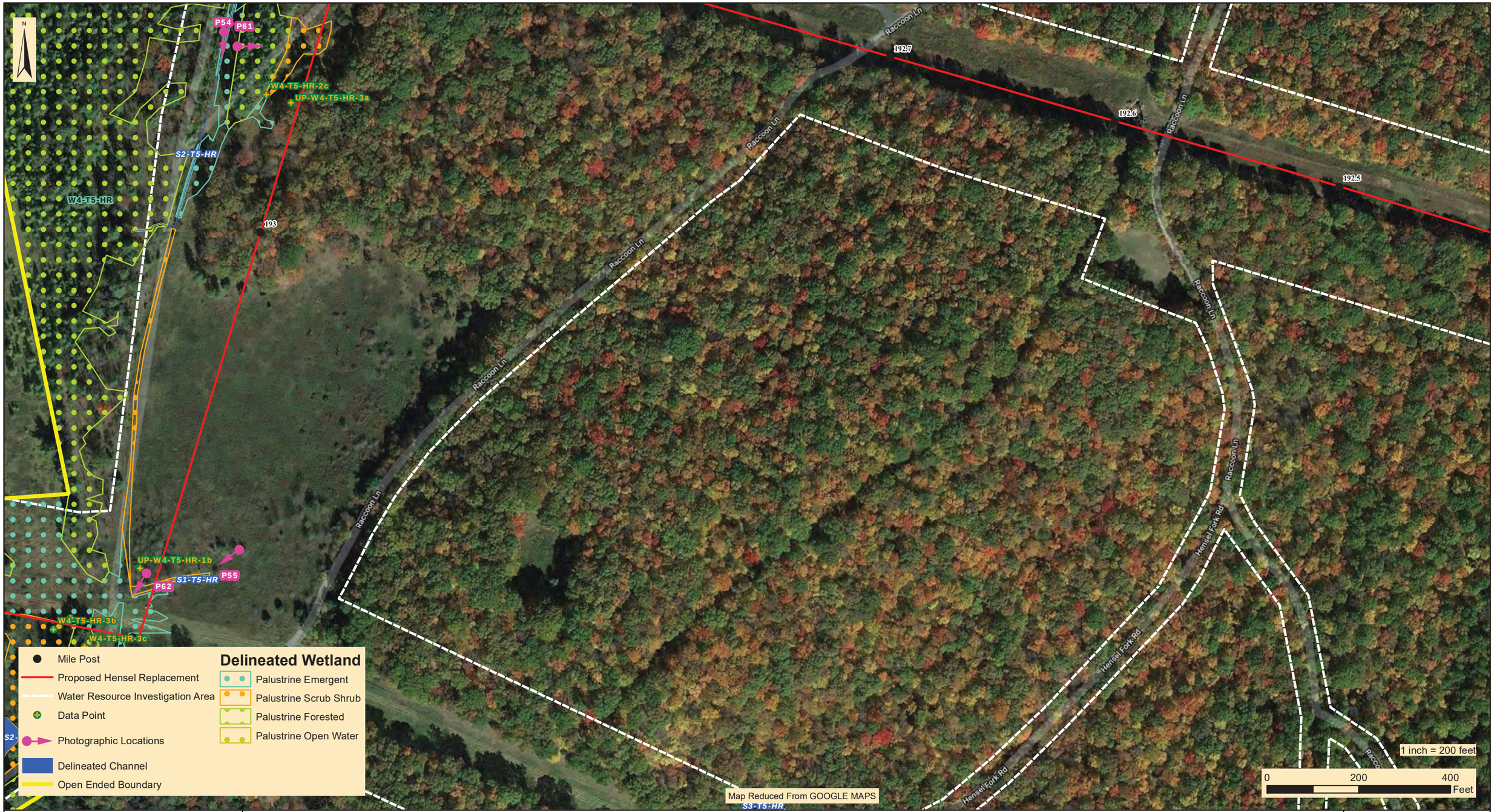
| Figure Number: | 3-26 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
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| WHM DRAWING NUMBER: | WILLIAMS200B003_27 |
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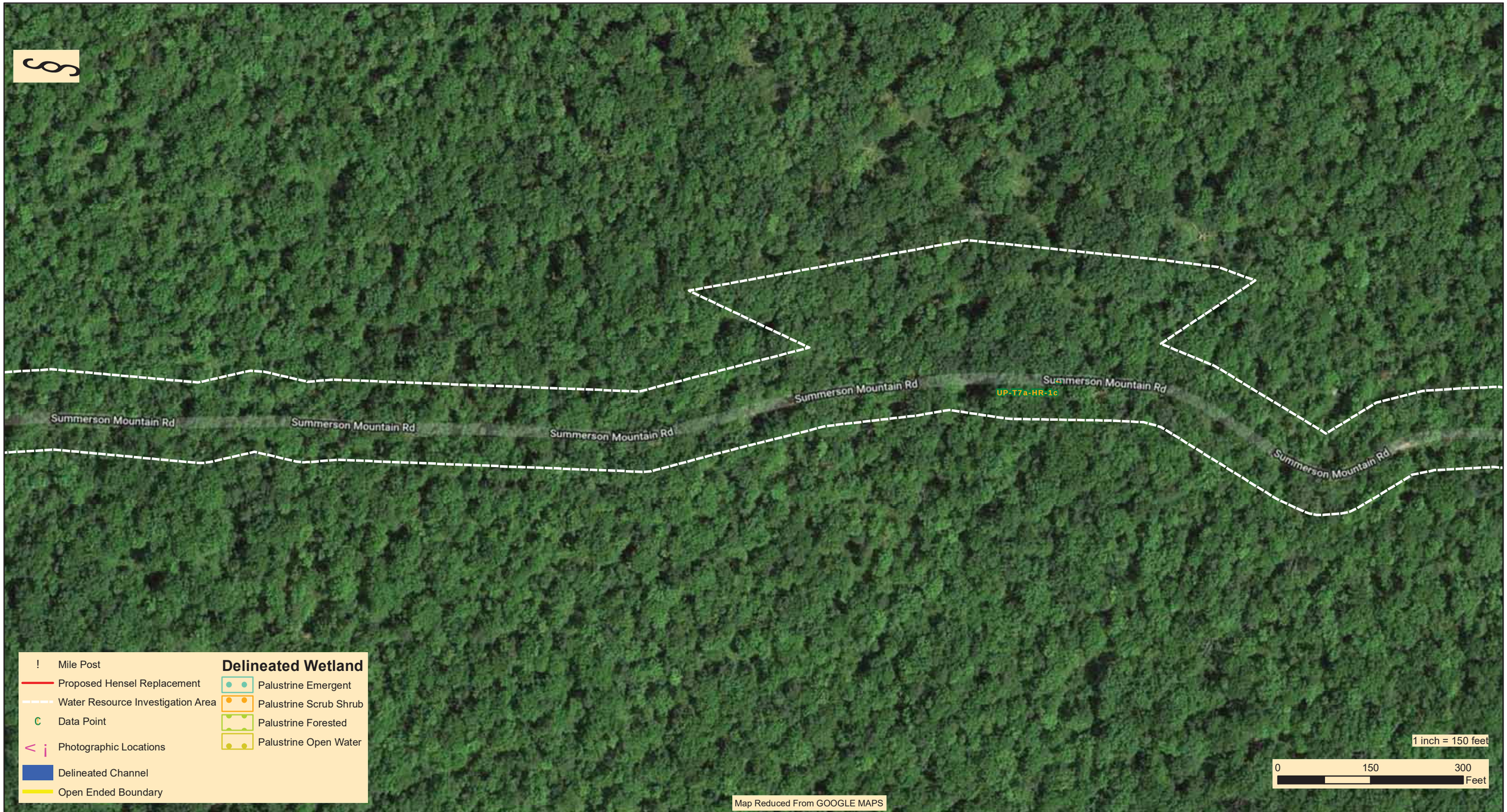
| Figure Number: | 3-27 |

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## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_28 |
| Drawn By: | BWH |
| Figure Number: | 3-28 |

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## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_29 |
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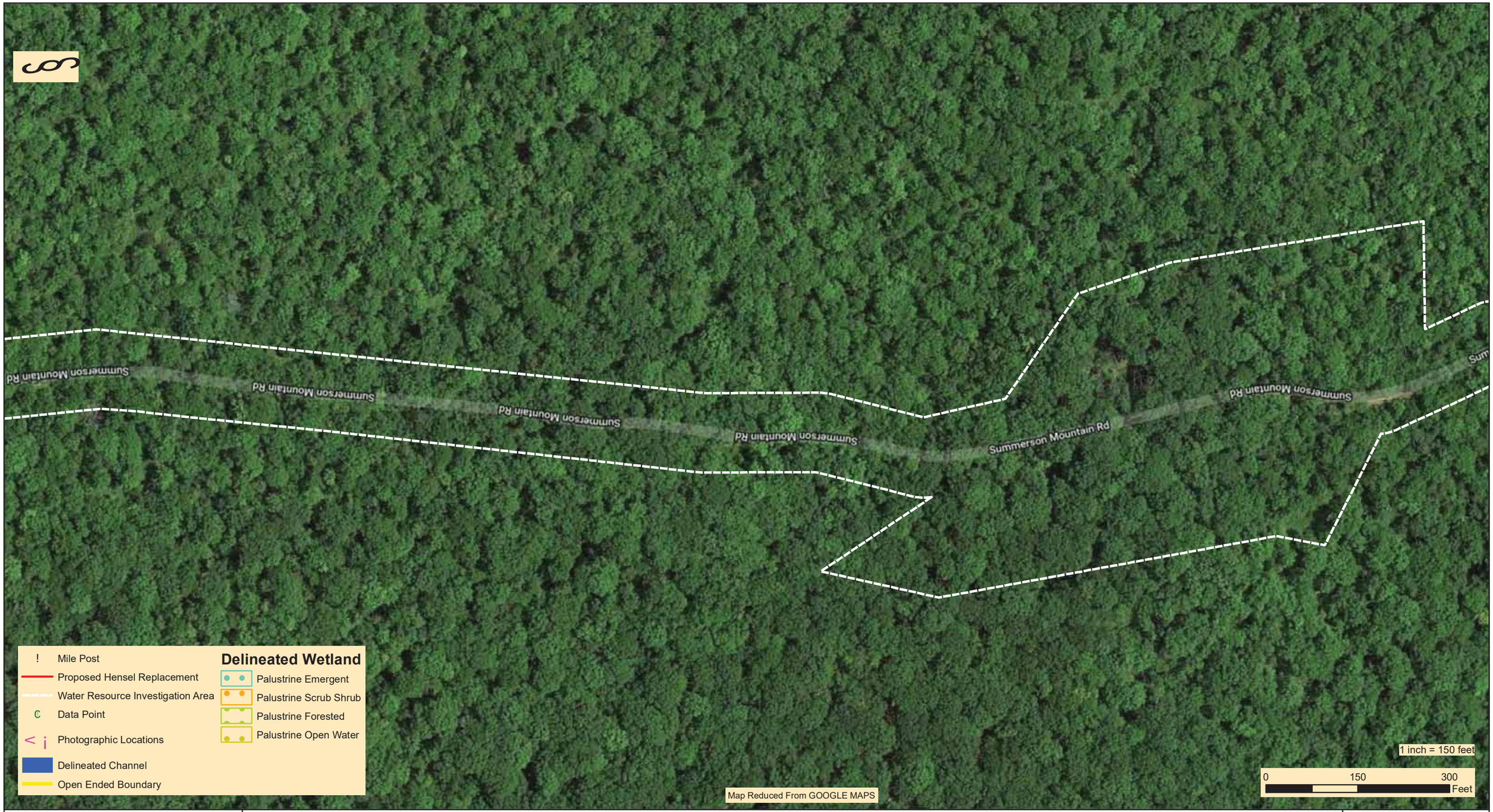
| Figure Number: | 3-29 |

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## LEIDY SOUTH PROJECT
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## WATER RESOURCES DELINEATION MAP

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| WHM DRAWING NUMBER: | WILLIAMS200B003_30 |
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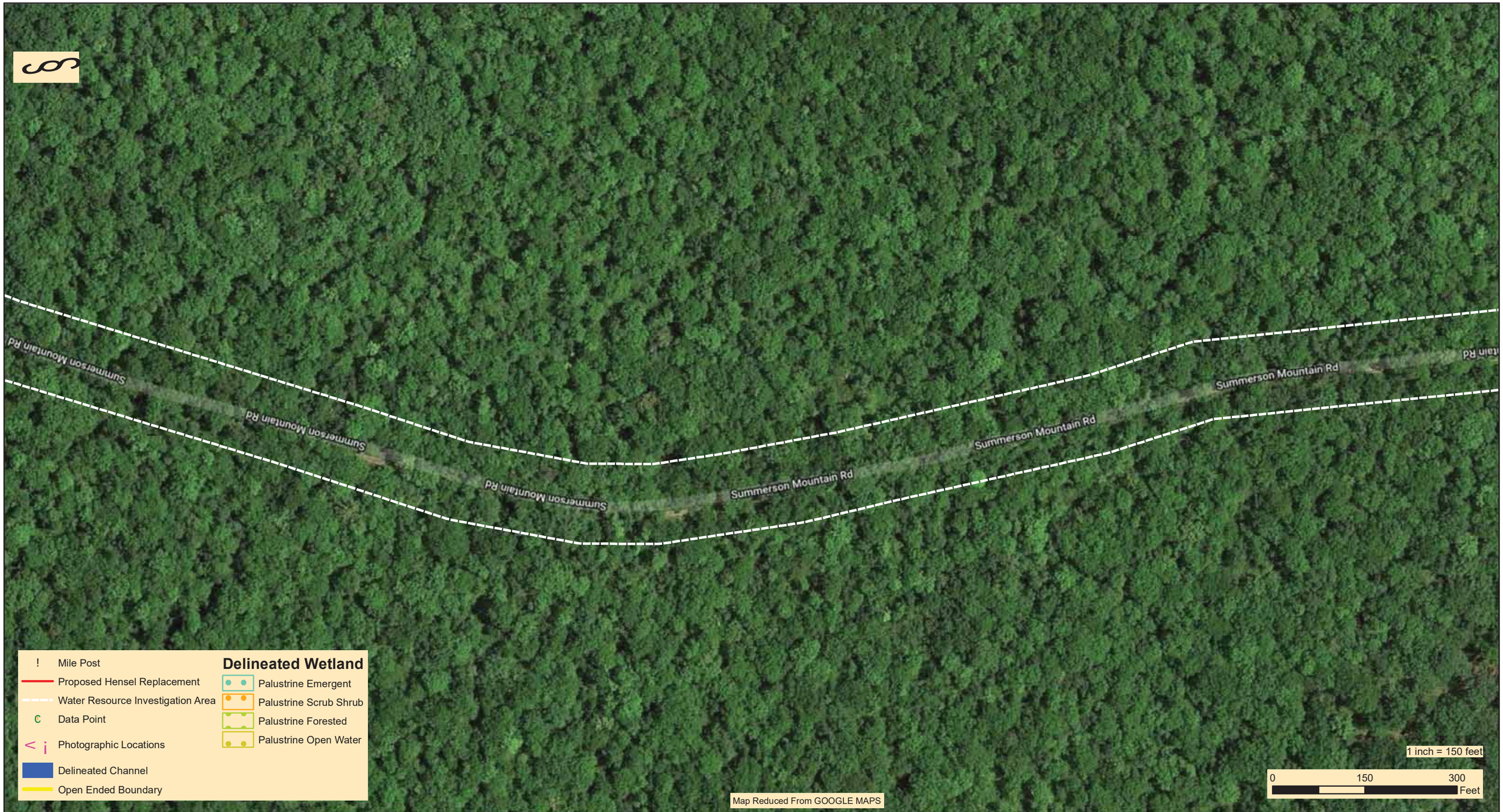


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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_31 |
| Drawn By: | BWH |
| Figure Number: | 3-31 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_32 |
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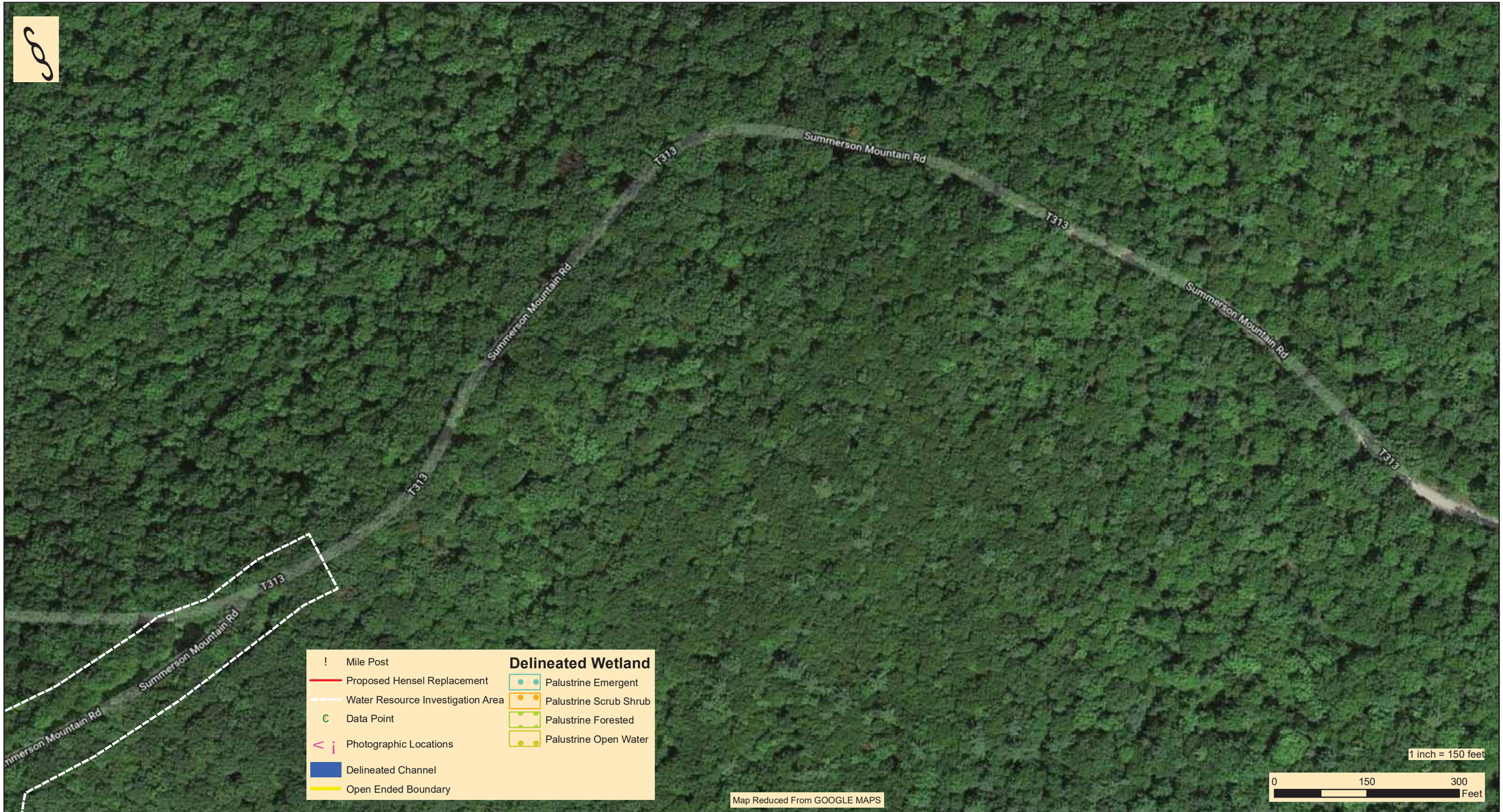
| Figure Number: | 3-32 |

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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_33 |
| Drawn By: | BWH |
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## LEIDY SOUTH PROJECT
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## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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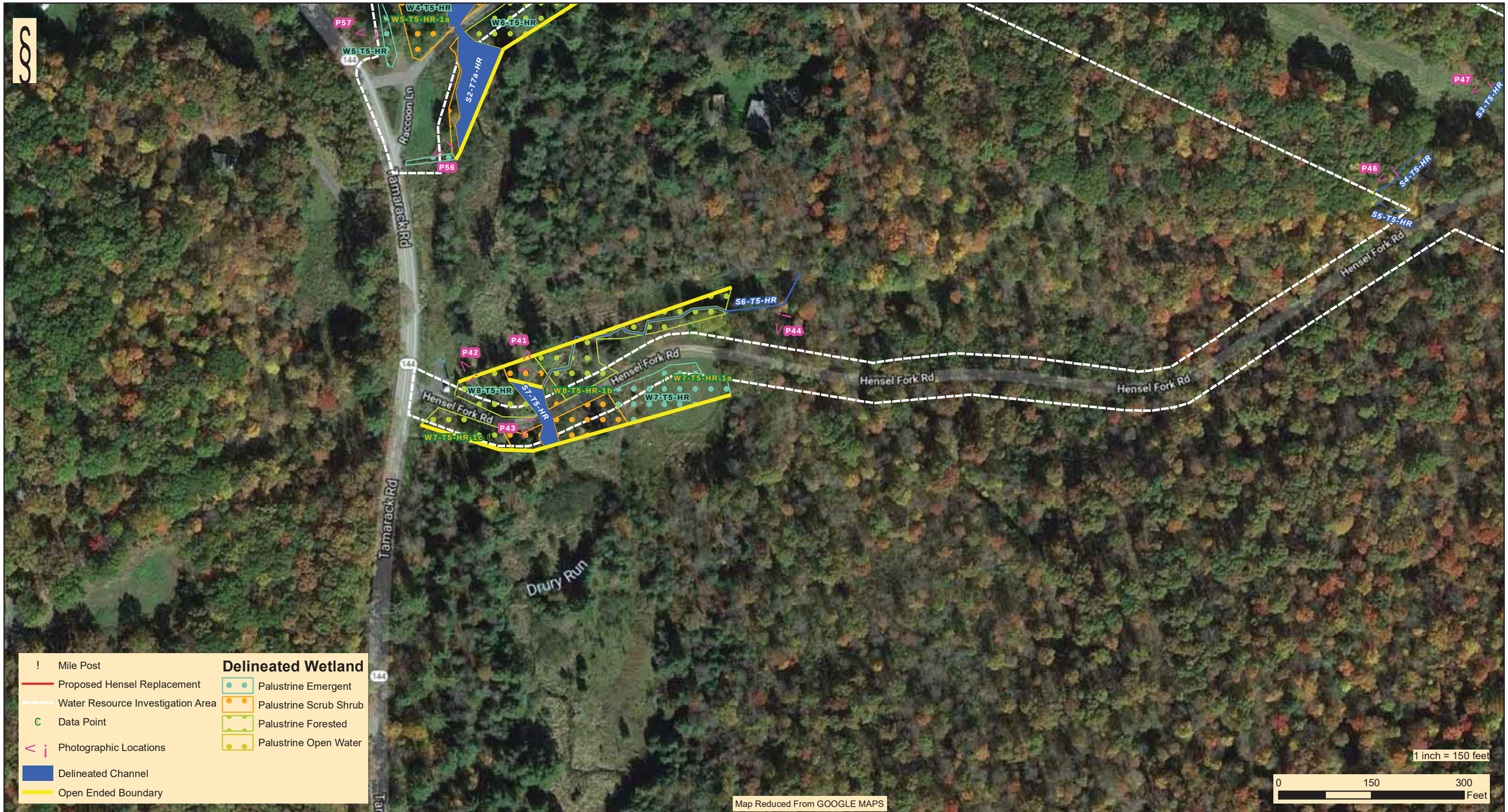


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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
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| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_35 |
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| Figure Number: | 3-35 |

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## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
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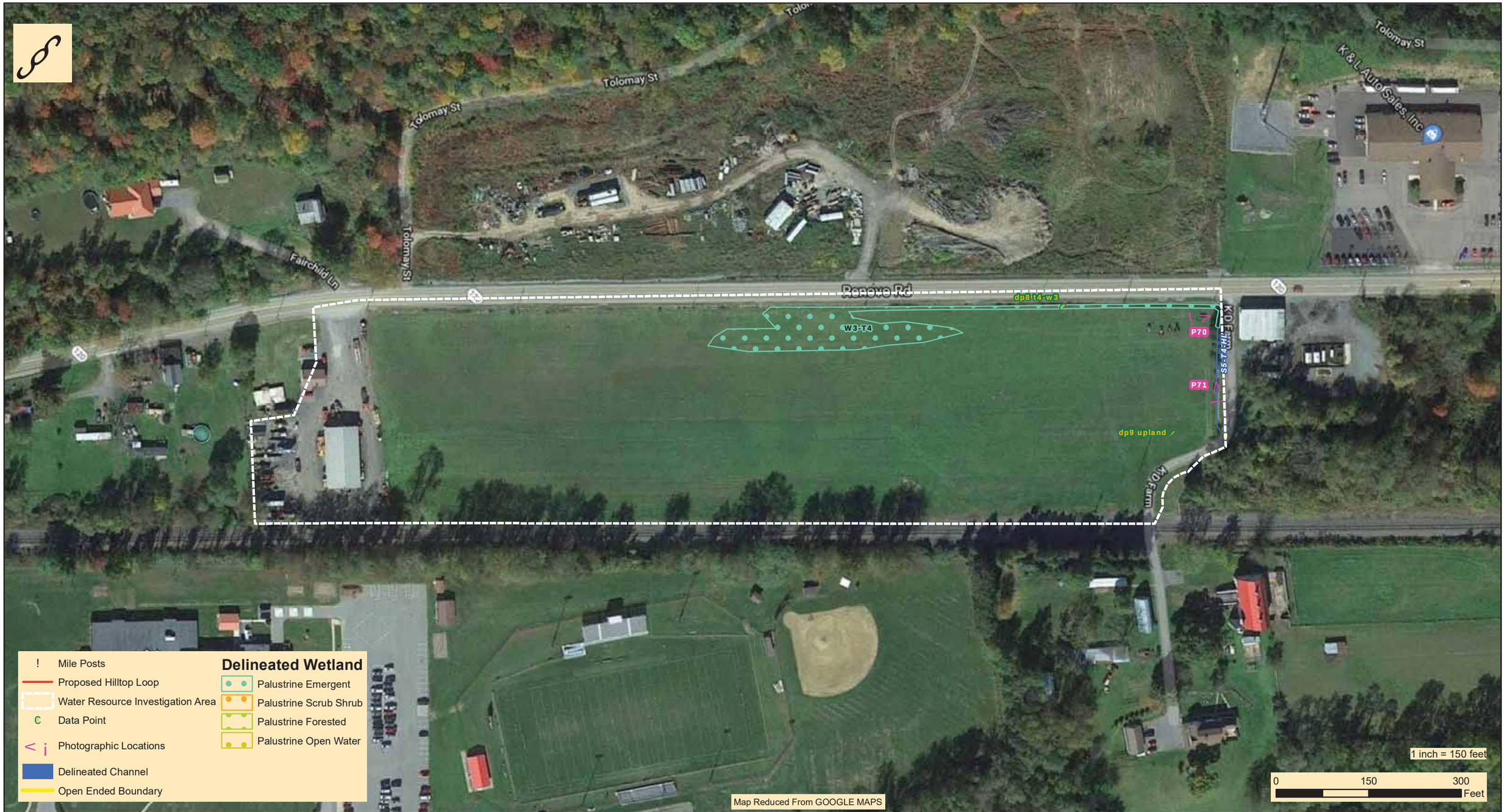


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## LEIDY SOUTH PROJECT
## HENSEL REPLACEMENT

## WATER RESOURCES DELINEATION MAP

CHAPMAN TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 06/04/19 |
| WHM DRAWING NUMBER: | WILLIAMS200B003_37 |
| Drawn By: | BWH |
| Figure Number: | 3-37 |

# PHOTOGRAPHIC DOCUMENTATION

**ID:** Photo 1

**Date:** 4/30/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W11-T6-HR.

**ID:** Photo 2

**Date:** 4/30/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W10-T6-HR.

**ID:** Photo 3

**Date:** 4/30/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W9-T6-HR.

**ID:** Photo 4

**Date:** 4/30/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S11-T6-HR.

**ID:** Photo 5

**Date:** 4/30/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W12-T6-HR.

**ID:** Photo 6

**Date:** 4/30/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland S12-T6-HR.

**ID:** Photo 7

**Date:** 6/13/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W13-T6-HR.

**ID:** Photo 8

**Date:** 5/2/19

**Taken by:** JH

**Comments:**
The photo shows a view of wetland W3-T7a-HR.

**ID:** Photo 9

**Date:** 5/2/19

**Taken by:** JH

**Comments:**
The photo shows a view of wetland W4-T7a-HR.

**ID:** Photo 10

**Date:** 5/2/19

**Taken by:** JH

**Comments:**
The photo shows a view of wetland W6-T7a-HR.

**ID:** Photo 11

**Date:** 5/2/19

**Taken by:** JH

**Comments:** The photo shows a view of wetland W5-T7a-HR.

**ID:** Photo 12

**Date:** 5/2/19

**Taken by:** JH

**Comments:** The photo shows a view of wetland W7-T7a-HR.

**ID:** Photo 13

**Date:** 5/2/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 14

**Date:** 5/1/19

**Taken by:** CG

**Comments:**
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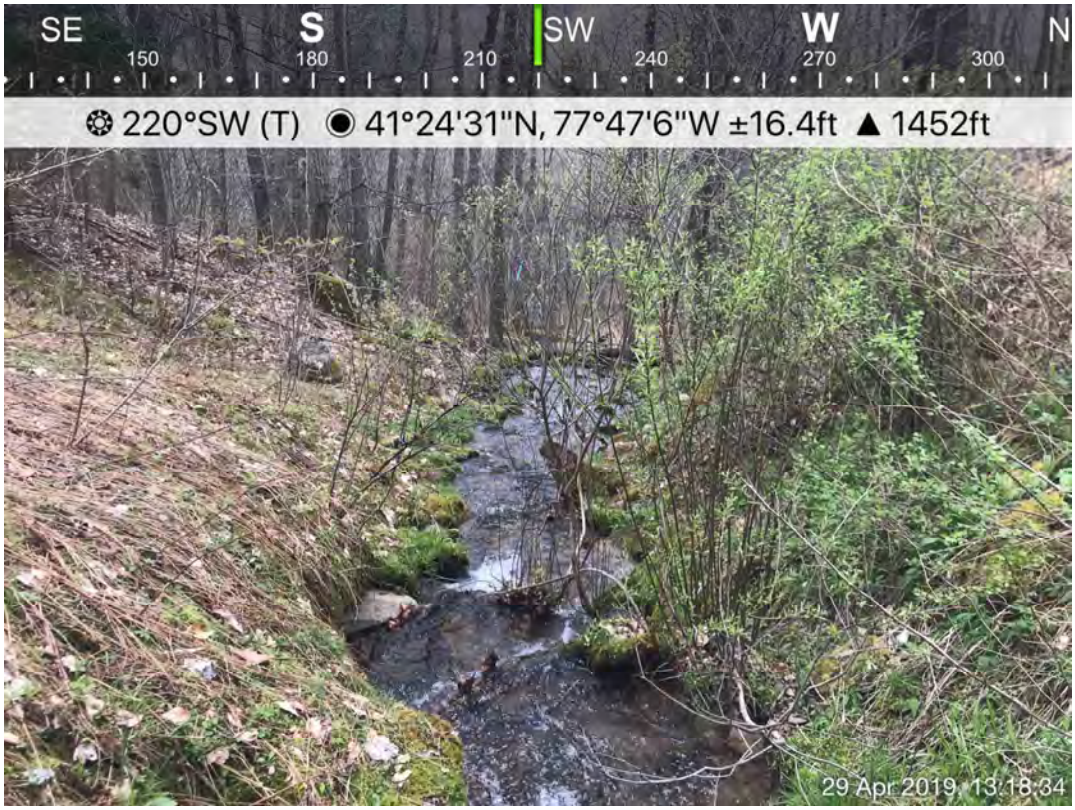


**ID:** Photo 15

**Date:** 4/29/19

**Taken by:** CG

**Comments:**
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**ID:** Photo 16

**Date:** 4/29/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S10-T6-HR.

**ID:** Photo 17

**Date:** 4/29/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W7-T6-HR-HR.

**ID:** Photo 18

**Date:** 4/29/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S7-T7-HR flowing through wetland W8-T6-HR.

**ID:** Photo 19

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W2-T7-HR.

**ID:** Photo 20

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W1-T7-HR.

**ID:** Photo 21

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W3-T6-HR.

**ID:** Photo 22

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W4-T6-HR.

**ID:** Photo 23

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S6-T6-HR.

**ID:** Photo 24

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S7-T6-HR.

**ID:** Photo 25

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S8-T6-HR.

**ID:** Photo 26

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S1-T8-HR.

**ID:** Photo 27

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S8-T7-HR.

**ID:** Photo 28

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S9-T7-HR within wetland W4-T7-HR.

**ID:** Photo 29

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S10-T7-HR.

**ID:** Photo 30

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S6-T7-HR flowing through wetland W1-T7-HR.

**ID:** Photo 31

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S5-T7-HR flowing through wetland W1-T7-HR.

**ID:** Photo 32

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S4-T7-HR flowing through wetland W1-T7-HR.

**ID:** Photo 33

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S3-T7-HR flowing through wetland W1-T7-HR.

**ID:** Photo 34

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of wetland W1-T7-HR.

**ID:** Photo 35

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S2-T7-HR flowing through wetland W1-T7-HR.

**ID:** Photo 36

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S2A-T7-HR.

**ID:** Photo 37

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S1-T7-HR (Hensel Fork) in an area where the channel braids.

**ID:** Photo 38

**Date:** 4/25/19

**Taken by:** CB

**Comments:**
The photo shows a view of stream S1-T7-HR (Hensel Fork).

**ID:** Photo 39

**Date:** 5/2/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S1-T6-HR.

**ID:** Photo 40

**Date:** 5/2/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S1-T6-HR.

**ID:** Photo 41

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S7-T5-HR.

**ID:** Photo 42

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W7-T5-HR.

**ID:** Photo 43

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W8-T5-HR and stream S7-T5-HR.

**ID:** Photo 44

**Date:** 4/30/19

**Taken by:** DW

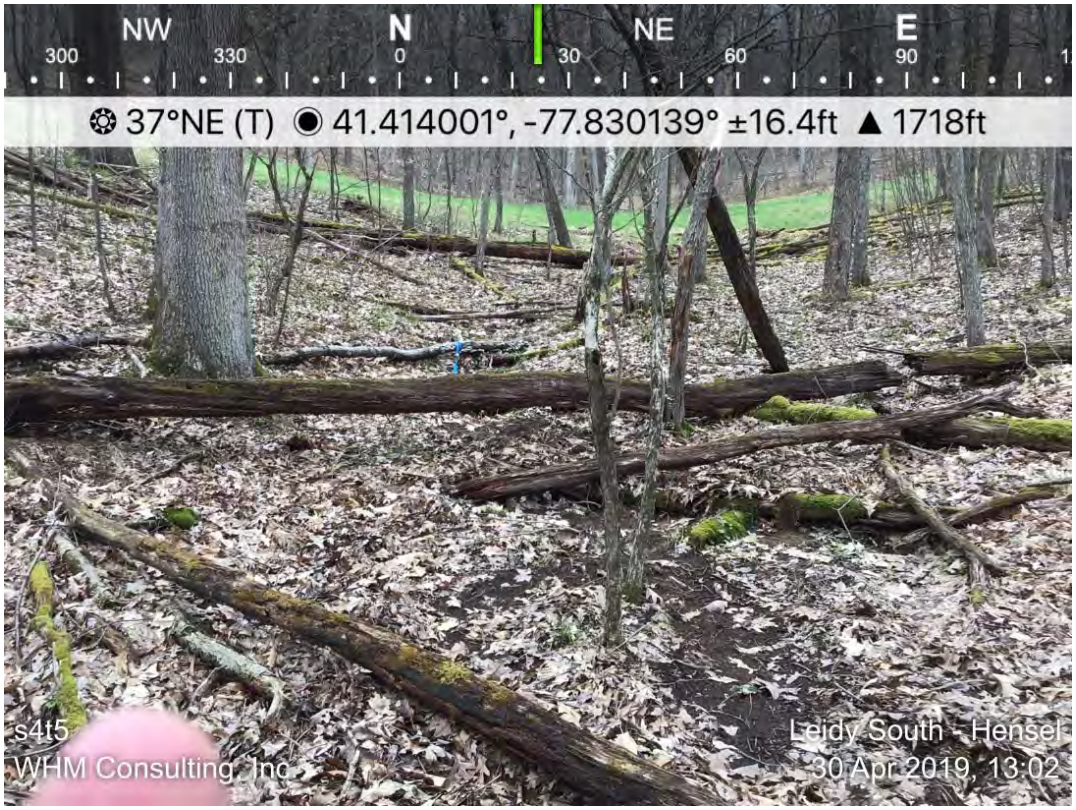
**Comments:**
The photo shows a view of stream S6-T5-HR.

**ID:** Photo 45

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S5-T5-HR.




**ID:** Photo 46

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S4-T5-HR.

**ID:** Photo 47

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S3-T5-HR.

**ID:** Photo 48

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W5-T6-HR.

**ID:** Photo 49

**Date:** 4/29/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W6-T6-HR.

**ID:** Photo 50

**Date:** 4/29/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W2-T7-HR.

**ID:** Photo 51

**Date:** 4/29/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W1-T7-HR.

**ID:** Photo 52

**Date:** 4/25/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S3-T5-HR.

**ID:** Photo 53

**Date:** 4/29/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S1-T7-HR within wetland W4-T5-HR

**ID:** Photo 54

**Date:** 4/24/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S2-T5-HR.

**ID:** Photo 55

**Date:** 4/24/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S1-T5-HR.

**ID:** Photo 56

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W6-T5-HR.

**ID:** Photo 57

**Date:** 4/30/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W5-T5-HR.

**ID:** Photo 58

**Date:** 4/24/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W3-T5-HR.

**ID:** Photo 59

**Date:** 4/24/19

**Taken by:** DW

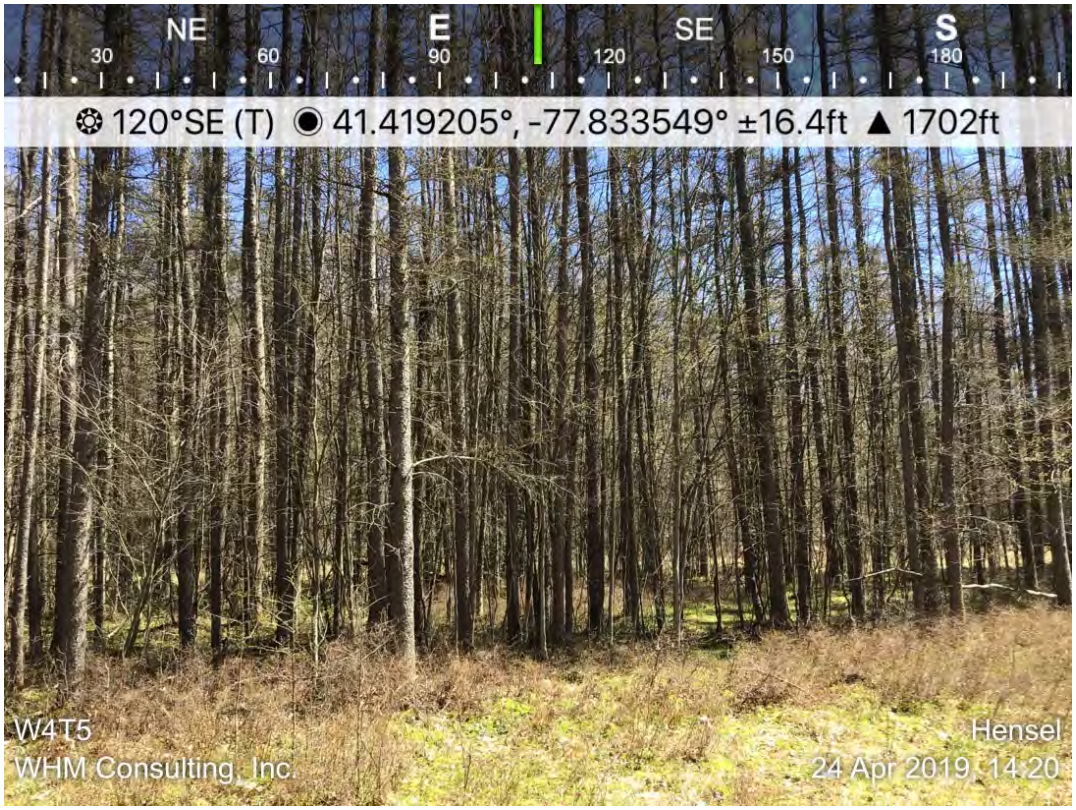
**Comments:**
The photo shows a view of wetland W2-T5-HR.

**ID:** Photo 60

**Date:** 4/24/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W1-T5-HR.




**ID:** Photo 61

**Date:** 4/24/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W4-T5-HR.

**ID:** Photo 62

**Date:** 4/24/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W4-T5-HR.

**ID:** Photo 63

**Date:** 5/1/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S2-T7a-HR (Drury Run) within wetland W4-T5-HR.

**ID:** Photo 64

**Date:** 04/11/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W4-T5-HR (Tamarack Swamp).

**ID:** Photo 65

**Date:** 6/11/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S1-T2-HR.

**ID:** Photo 66

**Date:** 04/10/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W4-T5-HR (Tamarack Swamp).

**ID:** Photo 67

**Date:** 04/10/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W2-T2-HR.

**ID:** Photo 68

**Date:** 04/10/19

**Taken by:** DW

**Comments:**
The photo shows a view of stream S1-T1-HR.

**ID:** Photo 69

**Date:** 04/10/19

**Taken by:** DW

**Comments:**
The photo shows a view of wetland W1-T1-HR.

**ID:** Photo 70

**Date:** 4/4/19

**Taken by:** CG

**Comments:**
The photo shows a view of wetland W3-T4-HR.

**ID:** Photo 71

**Date:** 4/4/19

**Taken by:** CG

**Comments:**
The photo shows a view of stream S5-T4-HR.

# WETLAND, UPLAND, AND WATERWAYS DATA FORMS

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 6/13/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T8-HR-1a

Investigator(s): CG, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.388515 Long.: -77.738391 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: T8-W1-1a is a wetland along a stream in a cow pasture on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T8-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Glyceria striata* | 30 | Yes | OBL |
| 2 *Carex lurida* | 30 | Yes | OBL |
| 3 *Juncus effusus* | 15 | No | FACW |
| 4 *Carex scoparia* | 10 | No | FACW |
| 5 *Carex stipata* | 10 | No | OBL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 95 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T8-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR4/2 | 95 | 10YR4/6 | 5 | C | M | Sandy Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:50% sphagnum ground cover

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 6/13/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W1-T8-HR-1a

Investigator(s): CG, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.388702 Long.: -77.738486 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: UP-T8-W1 is an upland data point located in a cow pasture on a pipeline ROW.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T8-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 40 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Lolium perenne* | 35 | Yes | FACU |
| 2 *Solidago rugosa* | 25 | Yes | FAC |
| 3 *Trifolium pratense* | 15 | No | FACU |
| 4 *Plantago major* | 5 | No | FACU |
| 5 *Potentilla simplex* | 5 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 25 | x 3 = | 75 |
| FACU species | 60 | x 4 = | 240 |
| UPL species | | x 5 = | |
| Column totals | 85 (A) | | 315 (B) |

Prevalence Index = B/A = 3.70

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W1-T8-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR4/4 | 100 | | | | | Clay Loam | |
| 8-12" | 10YR4/6 | 100 | | | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 6/21/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W2-T8-HR-1a

Investigator(s): CG, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.39241 Long.: -77.742476 Datum: NAD 83

Soil Map Unit Name: Clymer channery loam (CfB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W2-T8-1a is a wetland on a travel lane leading to a gate on a pipeline ROW. Tadpoles and freshwater mussels were present in wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 2"

Water table present? Yes ___ No ___ Depth (inches): ___

Saturation present? Yes ___ No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T8-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 30 | Yes | FACW |
| 2 *Scirpus polyphyllus* | 25 | Yes | OBL |
| 3 *Carex stipata* | 15 | No | OBL |
| 4 *Carex scoparia* | 15 | No | FACW |
| 5 *Persicaria pensylvanica* | 5 | No | FACW |
| 6 *Carex lurida* | 5 | No | OBL |
| 7 | | | |
| 8 | | | |
| | 95 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T8-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR4/2 | 100 | | | | | Gravelly Clay | |
| 4-8" | 10YR4/3 | 100 | | | | | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
X Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks: Soils were recently disturbed and compacted due to vehicle traffic and pipeline construction.

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 6/21/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W2-T8-HR-1a

Investigator(s): CG, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.392483 Long.: -77.742401 Datum: NAD 83

Soil Map Unit Name: Clymer channery loam (CfB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: UP-T8-W2 is an upland data point located on a pipeline ROW. | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2-T8-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Trifolium repens* | 50 | Yes | FACU |
| 2 *Lotus corniculatus* | 20 | Yes | FACU |
| 3 *Lespedeza capitata* | 10 | No | FACU |
| 4 *Plantago major* | 5 | No | FACU |
| 5 *Leucanthemum vulgare* | 5 | No | UPL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 85 | x 4 = | 340 |
| UPL species | 5 | x 5 = | 25 |
| Column totals | 90 (A) | | 365 (B) |

Prevalence Index = B/A = 4.05

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W2-T8-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR5/4 | 100 | | | | | Gravelly Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/30/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W10-T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.395374 Long.: -77.745401 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks:W10-T6-HR-1a is located within a PEM wetland located on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 2 |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): Surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W10-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 50 | Yes | FACW |
| 2 *Dichanthelium clandestinum* | 30 | Yes | FAC |
| 3 *Solidago rugosa* | 10 | No | FAC |
| 4 *Carex stricta* | 5 | No | OBL |
| 5 *Scirpus cyperinus* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W10-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR4/2 | 98 | 10YR4/6 | 2 | C | M | Rocky clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/30/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W9-T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.395333 Long.: -77.745608 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks:W9-T6-HR-1a is located wihtin a PEM wetland located on a pipeline ROW. This wetland abuts S11-T6-HR and is hydrologically connected to W11-T6-HR via this channel.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 1

Water table present? Yes X No ___ Depth (inches): Surface

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W9-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Rosa multiflora* | 3 | No | FACU |
| 2 *Salix nigra* | 1 | No | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 4 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 80 | Yes | FACW |
| 2 *Dichanthelium clandestinum* | 10 | No | FAC |
| 3 *Juncus effusus* | 5 | No | FACW |
| 4 *Carex stricta* | 5 | No | OBL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 6 | x 1 = | 6 |
| FACW species | 85 | x 2 = | 170 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 3 | x 4 = | 12 |
| UPL species | | x 5 = | |
| Column totals | 104 (A) | | 218 (B) |

Prevalence Index = B/A = 2.10

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- X 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W9-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR4/2 | 90 | 10YR5/6 | 10 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/30/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W11-T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.395473 Long.: -77.745417 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W11-T6-HR-1a is located within a PEM wetland located on a pipeline ROW. This wetland abuts S11-T6-HR and is hydrologically connected to W9-T6-HR via the channel.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 2

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W11-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 50 | Yes | FACW |
| 2 *Dichanthelium clandestinum* | 30 | Yes | FAC |
| 3 *Solidago rugosa* | 10 | No | FAC |
| 4 *Carex stricta* | 5 | No | OBL |
| 5 *Scirpus cyperinus* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W11-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR4/2 | 98 | 10YR4/6 | 2 | C | M | Rocky clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/30/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP--T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): None Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.395329 Long.: -77.745515 Datum: NAD 83

Soil Map Unit Name Cookport channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: UP-W9-T6-HR is an upland data point located on a pipeline ROW. | |

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| ___ Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| | |
|---|---|
| Field Observations:<br>Surface water present? Yes ___ No X Depth (inches): ___<br>Water table present? Yes ___ No X Depth (inches): ___<br>Saturation present? Yes ___ No X Depth (inches): ___<br>(includes capillary fringe) | **Wetland hydrology present?** Yes ___ No X |
| Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available: | |
| Remarks: | |

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Vaccinium angustifolium* | 60 | Yes | FACU |
| 2 *Rosa multiflora* | 5 | No | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 65 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Schedonorus arundinaceus* | 25 | Yes | FACU |
| 2 *Dichanthelium clandestinum* | 20 | Yes | FAC |
| 3 *Euthamia graminifolia* | 15 | No | FAC |
| 4 *Potentilla simplex* | 15 | No | FACU |
| 5 *Apocynum cannabinum* | 5 | No | FACU |
| 6 *Achillea millefolium* | 5 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 35 | x 3 = | 105 |
| FACU species | 115 | x 4 = | 460 |
| UPL species | | x 5 = | |
| Column totals | 150 (A) | | 565 (B) |

Prevalence Index = B/A = 3.77

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR4/3 | 100 | | | | | Loam | |
| 4-12" | 10YR5/4 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 5/30/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T11-HR-1a

Investigator(s): DW, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 3-8%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.395735 Long.: -77.744994 Datum: NAD 83

Soil Map Unit Name: Cookport Channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T11-HR-1a is an upland data point located in a ravine below wetlands on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T11-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Solidago sp.* | 30 | Yes | OBL-UPL |
| 2 *Pteridium aquilinum* | 20 | Yes | FACU |
| 3 *Fragaria virginiana* | 20 | Yes | FACU |
| 4 *Osmunda claytoniana* | 15 | No | FAC |
| 5 *Maianthemum racemosum* | 5 | No | FACU |
| 6 *Achillea millefolium* | 5 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.30% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = 3.65

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-T11-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | 10YR 2/1 | 100 | | | | | Organic | |
| 1-3" | 10YR 4/3 | 100 | | | | | Silt loam | |
| 3-14" | 10YR 5/4 | 100 | | | | | Silt loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 14"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/30/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W12-T6-HR-1c

Investigator(s): CG, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.397955 Long.: -77.752905 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W12-T6-HR-1c is located in a vernal pool in the middle of the woods that appears to have fluctuating water levels. Egg masses and tadpoles present.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes X | No ___ | Depth (inches): 24in | |
| Water table present? | Yes X | No ___ | Depth (inches): Surface | **Wetland hydrology present?** Yes X No ___ |
| Saturation present? (includes capillary fringe) | Yes X | No ___ | Depth (inches): Surface | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W12-T6-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 80 | Yes | FAC |
| 2 *Quercus alba* | 15 | No | FACU |
| 3 *Pinus rigida* | 5 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Vaccinium corymbosum* | 25 | Yes | FACW |
| 2 *Tsuga canadensis* | 1 | No | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 26 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex stricta* | 2 | No | OBL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 2 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet) All trees have morphological features.

## SOIL

**Sampling Point:** W12-T6-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | | | | | | | | organic |
| 1-2" | 10YR2/1 | 100 | | | | | Loam | |
| 2-10" | 2.5Y7/2 | 85 | 10YR7/6 | 15 | D | M | Coarse Sandy clay | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 6/21/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T8-HR-1a

Investigator(s): CG, CB Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.399675 Long.: -77.756996 Datum: NAD 83

Soil Map Unit Name: Cookport Channery loam (CpB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T8-02 is an upland data point located in a ravine on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T8-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dichanthelium clandestinum* | 35 | Yes | FAC |
| 2 *Securigera varia* | 20 | Yes | UPL |
| 3 *Dennstaedtia punctilobula* | 20 | Yes | FACU |
| 4 *Persicaria pensylvanica* | 15 | No | FACW |
| 5 *Veronica arvensis* | 5 | No | UPL |
| 6 *Lathyrus latifolius* | 5 | No | UPL |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.30% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 35 | x 3 = | 105 |
| FACU species | 20 | x 4 = | 80 |
| UPL species | 30 | x 5 = | 150 |
| Column totals | 100 (A) | | 365 (B) |

Prevalence Index = B/A = 3.65

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-T8-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR3/3 | 100 | | | | | Sandy Clay | |
| 3" | | | | | | | | Rock |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 3"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 5/1/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W13-T6-HR-1c

Investigator(s): PF, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.401192 Long.: -77.762806 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W13-T6-HR-1c is located within a PFO wetland that abuts S12-T6-HR.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W13-T6-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 80 | Yes | FAC* |
| 2 | *Acer rubrum* | 10 | No | FAC |
| 3 | *Betula alleghaniensis* | 10 | No | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100** | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A = 3.80

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

*All species displayed morphological adaptations, FACU indicator status reassigned to FAC.

**Ground is cpvered by 100% sphagnum.

## SOIL

**Sampling Point:** W13-T6-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR4/2 | 90 | 10YR4/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 5/2/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W4-T7a-HR-1c

Investigator(s): JH, DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.405139 Long.: -77.770631 Datum: NAD 83

Soil Map Unit Name Clymer-Cookport channery loam (CgB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation Y , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W4-T7-HR-1c is a PFO wetland (vernal pool) located adjacent to an existing grass hiking trail. Tadpoles, newts, wood frog eggs, and spotted salamander eggs were observed.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 36"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: W4-T7a-HR-1c is a vernal pool that is dominated by standing water instead of vegetation.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex sp.* | 5 | - | OBL-UPL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 5 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across all Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

X* 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: W4-T7-1c is a vernal pool located adjacent to an existing grass trail. Due to the presence of standing water, the wetland area is sparsely vegetated during the field surveys.

## SOIL

**Sampling Point:** W4-T7-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 2.5Y 5/1 | 95 | 10YR 5/8 | 5 | C | M | Clay Loam | |
| 8-12" | 2.5Y 5/1 | 70 | 10YR 5/8 | 30 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 5/2/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W3-T7a-HR-1c

Investigator(s): JH, DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.405085 Long.: -77.770747 Datum: NAD 83

Soil Map Unit Name Clymer-Cookport channery loams - CgB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W3-T7a-1c is a PEM wetland (vernal pool) located adjacent to an existing grass hiking trail. Tadpoles, newts, wood frog eggs, and spotted salamander eggs were observed.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 36"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: W3-T7-1c is a vernal pool that is dominated by standing water instread of vegetation.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex sp.* | 2 | Y | OBL-UPL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 2 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: W3-T7-1c is a vernal pool located adjacent to an existing grass trail. Due to the presence of standing water, the wetland area is sparsely vegetated.

## SOIL

**Sampling Point:** W3-T7a-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 2.5Y 5/1 | 95 | 10YR 5/8 | 5 | C | M | Clay Loam | |
| 8-12" | 2.5Y 5/1 | 70 | 10YR 5/8 | 30 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 5/2/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T7a-HR-1c

Investigator(s): JH, DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.408073 Long.: -77.771054 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T7-7 is an upland data point located within an existing grass hiking trail.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Pinus resinosa* | 30 | Y | FACU |
| 2 *Quecus montana* | 30 | Y | UPL |
| 3 *Sassafras albidum* | 30 | Y | FACU |
| 4 *Quercus rubra* | 10 | N | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Kalmia latifolia* | 40 | Y | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 40 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Grass sp.* | 70 | Y | OBL-UPL |
| 2 *Gaultheria procumbens* | 10 | N | FACU |
| 3 *Kalmia latifolia* | 5 | N | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 20.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: Rock moss observed at 30%, but is not a vascular plant.

## SOIL

**Sampling Point:** UP-T7a-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | 100 | | | | | Gravelly Silt Loam | |
| 2-7" | 10YR 5/6 | 100 | | | | | Gravelly Silt Loam | |
| 7" | | | | | | | | Refusal due to rock |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 7"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 05/02/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up-T7a-HR-2c

Investigator(s): DW, JH Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): MRLA 127 Lat.: 41.417158 Long: -77.772122 Datum: NAD 83

Soil Map Unit Name: Clymer channery loam - CfB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up-T7a-HR-2c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Sassafras albidum* | 60 | Yes | FACU |
| 2 | *Acer rubrum* | 20 | Yes | FAC |
| 3 | *Quercus montana* | 10 | No | UPL |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 90 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Kalmia latifolia* | 60 | Yes | FACU |
| 2 | *Sassafras albidum* | 10 | No | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Grass sp.* | 70 | Yes | OBL-UPL |
| 2 | *Polytrichum sp.* | 20 | No | - |
| 3 | *Gaultheria procumbens* | 15 | No | FACU |
| 4 | *Kalmia latifolia* | 10 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 115 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 20 | x 3 = | 60 | |
| FACU species | 155 | x 4 = | 620 | |
| UPL species | 10 | x 5 = | 50 | |
| Column totals | 185 | (A) | 730 | (B) |

Prevalence Index = B/A = 3.95

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** Up-T7a-HR-2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | | | | | | | |
| 2-5" | 10YR 4/3 | | | | | | | |
| 5-7" | 10YR 5/6 | | | | | | | |
| 7" | | | | | | | | Refusal |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Refusal

Depth (inches): 7"

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 05/02/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W5-T7a-HR-1c

Investigator(s): DW, JH Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Linear Slope (%): 0-8%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.432888 Long.: -77.768045 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Vernal pool/ PEM / PFO complex. A PEM wetland was called on the existing access road.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Amphibian eggs, 0-3' vernal pools.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W5-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 50 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 50 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 40 | Yes | FAC |
| 2 *Sphagnum sp.* | 20 | - | OBL-UPL |
| 3 *Viola sp.* | 10 | No | OBL-UPL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 70 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 150.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = 0.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W5-T7a-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 2-12" | 10YR 6/1 | 70 | 7.5YR 5/6 | 30 | C | M | Clay | |
| 0-2" | 10YR 2/1 | | | | | | Organic | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 05/02/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W6-T7a-HR-1c

Investigator(s): DW, JH Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Linear Slope (%): 0-8%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.432819 Long.: -77.76797 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Vernal pool / PFO complex

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Amphibian eggs, 0-3' vernal pools.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W6-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 50 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 50 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Glyceria striata* | 20 | Yes | OBL |
| 2 *Viola sp.* | 5 | Yes | OBL-UPL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 25 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W6-T7a-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | | | | | | Organic | |
| 2-12" | 10YR 6/1 | 75 | 7.5YR 5/8 | 25 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 05/02/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W7-T7a-HR-1c

Investigator(s): DW, JH Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): concave Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.4328 Long.: -77.767861 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W7-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rurbrum* | 40 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 40 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Sphagnum sp.* | | - | |
| 2 *Carex sp.* | 10 | Yes | OBL-UPL |
| 3 *Viola blanda.* | 5 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 15 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 5 | x 2 = | 10 | |
| FAC species | 40 | x 3 = | 120 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 45 | (A) | 130 | (B) |

Prevalence Index = B/A = 3

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: Sphagnum sp.was located within the wetland

## SOIL

**Sampling Point:** W7-T7a-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 8-10 | 10YR 5/1 | 85 | 7.5YR 5/8 | 15 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 05/02/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W8-T7a-HR-1c

Investigator(s): DW, JH Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): slight concave Slope (%): 0-8%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.732792 Long.: -77.767235 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: PFO wetland seep above a boulder field.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 1"

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W8-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 60 | Yes | FAC |
| 2 *Ulmus rubra* | 30 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 90 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Betula alleghaniensis* | 5 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 5 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W8-T7a-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR 2/1 | | | | | | Organic | |
| 4-8" | 10YR 6/1 | 90 | 7.5YR 5/8 | 10 | C | M | Sandy loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 05/02/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-T7a-HR-3c

Investigator(s): DW, JH Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 0-8%

Subregion (LRR or MLRA): LRR N Lat.: 41.435806 Long.: -77.764745 Datum: NAD 83

Soil Map Unit Name: Clymer channery loam - CfB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T7a-HR-3c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Grass sp.* | 60 | Yes | OBL-UPL |
| 2 *Dennstaedtia punctilobula* | 20 | Yes | FACU |
| 3 *Comptonia peregrina* | 20 | Yes | UPL |
| 4 *Potentilla pensylvanica* | 10 | No | FACU |
| 5 *Trifolium repens* | 5 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 115 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 35 | x 4 = | 140 | |
| UPL species | 20 | x 5 = | 100 | |
| Column totals | 55 | (A) | 240 | (B) |

Prevalence Index = B/A = 4.36

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-T7a-HR-3c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR 4/3 | | | | | | Gravelly silt loam | |
| 3-6" | 10YR 5/6 | | | | | | Sandy loam | |
| 6" | | | | | | | Rock refusal | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 6"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 5/01/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W17-T7-HR-1a

Investigator(s): PF, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Toe slope Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.406685 Long.: -77.778549 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W17-T7-HR-1a is a PEM wetland located between two hills on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 2"

Water table present? Yes X No ___ Depth (inches): Surface

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W17-T7-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex scoparia* | 35 | Yes | FACW |
| 2 *Juncus effusus* | 25 | Yes | FACW |
| 3 *Osmunda cinnamomea* | 15 | No | FACW |
| 4 *Solidago rugosa* | 15 | No | FAC |
| 5 *Carex vulpinoidea* | 10 | No | OBL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W17-T7-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR4/2 | 95 | 10YR4/6 | 5 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Rreplacement City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W7-T6-HR-1c

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 25-50

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.408987 Long.: -77.787143 Datum: NAD 83

Soil Map Unit Name Hazleton-Laidig Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W7-T6-HR-1c is a PFO wetland in the floodplain of a S7-T7-HR receiving water from seepage at the bottom of a slope and from the stream.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W7-T6-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 30 | Yes | FAC |
| 2 | *Betula alleghaniensis* | 20 | Yes | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 50 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Alnus serrulata* | 5 | Yes | OBL |
| 2 | *Betula lenta* | 2 | Yes | FACU |
| 3 | *Beltula alleghaniensis* | 2 | Yes | FAC |
| 4 | *Tsuga canadensis* | 2 | Yes | FACU |
| 5 | *Fagus grandifolia* | 2 | Yes | FACU |
| 6 | | | | |
| 7 | | | | |
| | | 13 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Nasturtium officinale* | 20 | Yes | OBL |
| 2 | *Carex stricta* | 20 | Yes | OBL |
| 3 | *Onoclea sensibilis* | 5 | No | FACW |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 45 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 9 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W7-T6-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR4/2 | 98 | 10YR4/6 | 2 | C | M | Silt loam | |
| 6" | | | | | | | | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 6"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W8-T6-HR-1b

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.409663 Long.: -77.787445 Datum: NAD 83

Soil Map Unit Name Hazleton-Laidig Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W8-T6-HR-1b is located within a PSS wetland in the floodplain of S7-T7-HR.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W8-T6-HR-1b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Salix nigra* | 60 | Yes | OBL |
| 2 *Alnus serrulata* | 10 | No | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 70 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex stricta* | 80 | Yes | OBL |
| 2 *Onoclea sensibilis* | 5 | No | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W8-T6-HR-1b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR4/2 | 98 | 5YR5/8 | 2 | C | M | Sandy clay | |
| 10" | | | | | | | | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W2-T7-HR-1c

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): Concave Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.410083 Long.: -77.787709 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidg Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W2-T7-HR-1c is a PFO wetland located on the edge of the existing pipeline ROW abutting S7-T7-HR.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T7-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Tsuga canadensis* | 40 | Yes | FAC* |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 40 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Tsuga canadensis* | 15 | Yes | FAC* |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 15 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Glyceria striata* | 40 | Yes | OBL |
| 2 *Impatiens capensis* | 40 | Yes | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet) *Eastern hemlock displayed morphological adaptations.

## SOIL

**Sampling Point:** W2-T7-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/1 | 80 | 7.5YR 5/6 | 20 | C | M | Silt Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W8-T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-6%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.409666 Long.: -77.788146 Datum: NAD 83

Soil Map Unit Name Hazleton-Laidg Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W8-T6-HR is an upland data point located on a slope on a pipeline ROW above a stream.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W8-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Euthamia graminifolia* | 40 | Yes | FAC |
| 2 *Rubus idaeus* | 20 | Yes | FAC |
| 3 *Lotus corniculatus* | 5 | No | FACU |
| 4 *Dichanthelium clandestinum* | 5 | No | FAC |
| 5 *Lolium perenne* | 5 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 75 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W8-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR4/4 | 100 | | | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7-HR-3a

Investigator(s): PF, CB Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.41047 Long.: -77.79123 Datum: NAD 83

Soil Map Unit Name Hazleton-Laidig Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W1-T7-3a is a PEM wetland located within the floodplain of a stream on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): Surface

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7-HR-3a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Leersia oryzoides* | 25 | Yes | OBL |
| 2 *Carex scoparia* | 20 | Yes | FACW |
| 3 *Juncus effusus* | 15 | Yes | FACW |
| 4 *Carex lurida* | 15 | Yes | OBL |
| 5 *Impatiens capensis* | 5 | No | FACW |
| 6 *Osmunda cinnamomea* | 5 | No | FACW |
| 7 *Onoclea sensibilis* | 5 | No | FACW |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet) Sphagnum moss is present in %70 of wetland.

## SOIL

**Sampling Point:** W1-T7-HR-3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 10YR4/2 | 90 | 10YR5/6 | 10 | C | M | Gravelly Clay | |
| 7" | | | | | | | | Rock |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 7"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W1-T7-HR-4a

Investigator(s): CG, CB Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.41037 Long.: -77.791308 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T7-W1-2a is an upland data point located on a terrace on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T7-HR-4a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Betula lenta* | 15 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 15 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dennstaedtia punctilobula* | 80 | Yes | FACU |
| 2 *Lycopodium obscurum* | 5 | No | FACU |
| 3 *Potentilla simplex* | 5 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 105 | x 4 = | 420 |
| UPL species | | x 5 = | |
| Column totals | 105 (A) | | 420 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W1-T7-HR-4a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR4/4 | 100 | | | | | Clay | |
| 6-9" | 10YR 5/6 | 100 | | | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7-HR-2b

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 in LRRN Lat.: 41.410584 Long.: -77.791486 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Stream floodplain wetland on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7-HR-2b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 30 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Salix nigra* | 60 | Yes | OBL |
| 2 *Ribes americanum* | 20 | Yes | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 80 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex stricta* | 30 | Yes | OBL |
| 2 *Pycnanthemum muticum* | 10 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 40 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T7-HR-2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 10YR4/2 | 90 | 10YR5/6 | 10 | C | M | Fine sandy clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7-HR-1c

Investigator(s): PF, CB Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.410428 Long.: -77.792545 Datum: NAD 83

Soil Map Unit Name Hazleton - Leidig Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W1-T7-HR-1c is a PFO wetland located within the floodplain of a stream. The Hensel Fork (S1-T7) abuts the wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 0"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 80 | Yes | FAC* |
| 2 | *Betula alleghaniensis* | 10 | No | FAC |
| 3 | *Betula lenta* | 5 | No | FAC* |
| 4 | *Acer rubrum* | 5 | No | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 5 | Yes | FAC* |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 5 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Osmunda cinnamomea* | 5 | Yes | FACW |
| 2 | *Carix stricta* | 5 | Yes | OBL |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 10 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

*All species displayed morphological adaptations indicator status reassigned from FACU to FAC

## SOIL

**Sampling Point:** W1-T7-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR3/1 | 100 | | | | | Gravelly sandy clay | |
| 6-10" | 10YR3/1 | 98 | 10YR4/4 | 2 | C | M | Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7-HR-3b

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 in LRRN Lat.: 41.411949 Long.: -77.797445 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Stream floodplain wetland on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7-HR-3b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 30 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Salix nigra* | 50 | Yes | OBL |
| 2 *Alnus serrulata* | 2 | No | OBL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 52 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex crinita* | 15 | Yes | OBL |
| 2 *Carex scoparia* | 10 | Yes | FACW |
| 3 *Juncus effusus* | 5 | Yes | FACW |
| 4 *Carex lurida* | 5 | Yes | OBL |
| 5 *Impatiens capensis* | 5 | Yes | FACW |
| 6 *Euthamia graminifolia* | 5 | Yes | FAC |
| 7 *Osmundastrum cinnamomea* | 5 | Yes | FACW |
| 8 *Solanum dulcamara* | 5 | Yes | FAC |
| | 55 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across all Strata: 9 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T7-HR-3b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 10YR4/2 | 90 | 10YR5/6 | 10 | C | M | Fine sandy clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7-HR-1b

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.412023 Long.: -77.797445 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:W1-T7-HR-1b is located within a PSS floodplain wetland located on a pipeline ROW. S1-T7-HR flows throughout the wetland

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7-HR-1b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 30 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Salix nigra* | 60 | Yes | OBL |
| 2 *Ribes americanum* | 20 | Yes | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 80 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex stricta* | 30 | Yes | OBL |
| 2 *Pycnanthemum muticum* | 10 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 40 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T7-HR-1b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 10YR4/2 | 90 | 10YR5/6 | 10 | C | M | Fine sandy clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7-HR-1a

Investigator(s): PF, CB Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.41209 Long.: -77.797499 Datum: NAD 83

Soil Map Unit Name Hazleton - Laidig Comples (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W1-T7-HR-1a is located within a PEM wetland located within the existing pipeline ROW. Hensle Fork (S1-T7) flows throughout the wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes X | No ___ | Depth (inches): 0" | | |
| Water table present? | Yes X | No ___ | Depth (inches): 0" | **Wetland hydrology present?** | Yes X No ___ |
| Saturation present? (includes capillary fringe) | Yes X | No ___ | Depth (inches): 0" | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 40 | Yes | FAC |
| 2 *Dichanthelium clandestinum* | 20 | Yes | FAC |
| 3 *Carex sp.* | 10 | - | OBL-UPL |
| 4 *Solidago sp.* | 10 | - | OBL-UPL |
| 5 *Potentilla reptans* | 10 | No | UPL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T7-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR 4/2 | 95 | 5YR 5/6 | 5 | C | M | gravelly loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7-HR-2a

Investigator(s): PF, CB Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.412117 Long.: -77.797598 Datum: NAD 83

Soil Map Unit Name Hazleton-Laidig Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W1-T7-1a is a PEM wetland located within the floodplain of a stream on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7-HR-2a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex gracillima* | 15 | Yes | FACU |
| 2 *Carex scoparia* | 15 | Yes | FACW |
| 3 *Juncus effusus* | 15 | Yes | FACW |
| 4 *Carex lurida* | 15 | Yes | OBL |
| 5 *Carex stipata* | 10 | No | OBL |
| 6 *Solanum dulcamara* | 5 | No | FAC |
| 7 *Dichanthelium clandestinum* | 5 | No | FAC |
| 8 *Euthamia graminifolia* | 5 | No | FAC |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T7-HR-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR3/2 | 98 | 10YR4/6 | 2 | C | M | Fine Sandy Clay | |
| 6-12" | 10YR4/2 | 95 | 10YR5/6 | 5 | C | M | Fine Sandy Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W4-T7-HR-1c

Investigator(s): PF, CB Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 5-8%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.410193 Long.: -77.791984 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: T7-W4 is a PFO wetland along a stream on a side hill.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T7-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Fraxinus pennsylvanica* | 10 | Yes | FACW |
| 2 | *Acer rubrum* | 5 | Yes | FAC |
| 3 | *Betula alleghaniensis* | 5 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Impatiens capensis* | 15 | Yes | FACW |
| 2 | *Boehmeria cylindrica* | 15 | Yes | FACW |
| 3 | *Osmunda claytoniana* | 10 | Yes | FAC |
| 4 | *Carex vulpinoidea* | 10 | Yes | OBL |
| 5 | *Alliaria petiolata* | 5 | No | FACU |
| 6 | *Viola cucullata* | 5 | No | FACW |
| 7 | | | | |
| 8 | | | | |
| | | 60 | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W4-T7-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR3/2 | 90 | 10YR4/6 | 10 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W3-T6-HR-1c

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 25-50%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.411098 Long.: -77.791287 Datum: NAD 83

Soil Map Unit Name Hazelton - Laidig Complex, extremley stony (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W3-T6-HR-1c is located within a spring fed PFO wetland located on a hillslope above a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T6-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 30 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 30 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Rosa multiflora* | 2 | No | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 2 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Osmundastrum cinnamomeum* | 20 | Yes | FACW |
| 2 *Carix stricta* | 10 | Yes | OBL |
| 3 *Podophyllum peltatum* | 10 | Yes | FACU |
| 4 *Geranium sp.* | 5 | - | UPL-OBL |
| 5 *Rumex crispus* | 5 | No | FAC |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 50 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T6-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | | | | | | | | organic |
| 1-4" | 10YR4/1 | 100 | | | | | Silt loam | No redox |
| 4-9" | Gley1 5/N | 80 | 10YR5/6 | 20 | C | M | Clay | |
| 9" | | | | | | | | Rock refusal |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
X Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 9"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W4-T6-HR-1c

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.4109 Long.: -77.791786 Datum: NAD 83

Soil Map Unit Name Hazleton-Laidig Complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W4-T6-HR-1c is located within a spring fed wetland on a sidehill near a pipeline ROW.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| X Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| X High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | ___ Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| ___ Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes X | No ___ | Depth (inches): <1" | **Wetland hydrology present?** | Yes X No ___ |
| Water table present? | Yes X | No ___ | Depth (inches): 0" | | |
| Saturation present? (includes capillary fringe) | Yes X | No ___ | Depth (inches): Surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T6-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 60 | Yes | FAC |
| 2 | *Betula lenta* | 10 | No | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Hamamelis virginiana* | 10 | Yes | FACU |
| 2 | *Vaccinium corymbosum* | 5 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 15 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Osmundastrum cinnamomeum* | 50 | Yes | FACW |
| 2 | *Carex stricta* | 10 | No | OBL |
| 3 | *Equisetum arvense* | 5 | No | FAC |
| 4 | *Onoclea sensibilis* | 5 | No | FACW |
| 5 | *Geranium sp.* | 5 | - | OBL-UPL |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 75 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet) 50% sphagnum ground cover

## SOIL

**Sampling Point:** W4-T6-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR4/1 | 100 | | | | | Clay loam | |
| 2-6" | 2.5Y3/1 | 90 | 10YR6/6 | 10 | C | M | Sandy Clay loam | |
| 6-8" | 5YR3/3 | 60 | 10YR6/8 | 40 | C | M | Clay | |
| 8" | | | | | | | | Rock |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/25/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W4-T6-HR-1c

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA127 in LRRN Lat.: 41.411129 Long.: -77.791724 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig complex (HoF) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T6-W4 is an upland data point located in the woods above a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T6-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Fagus grandifolia* | 25 | Yes | FACU |
| 2 | *Quercus montana* | 15 | Yes | UPL |
| 3 | *Quercus alba* | 15 | Yes | FACU |
| 4 | *Acer rubrum* | 15 | Yes | FAC |
| 5 | *Betula lenta* | 10 | No | FACU |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Fagus grandifolia* | 20 | Yes | FACU |
| 2 | *Acer pensylvanicum* | 5 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 25 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 16.70% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 15 | x 3 = | 45 |
| FACU species | 75 | x 4 = | 300 |
| UPL species | 15 | x 5 = | 75 |
| Column totals | 105 (A) | | 420 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W4-T6-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-1" | | | | | | | | organic |
| 1-12"" | 10YR 5/4 | 100 | | | | | gravelly loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 6/21/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T8-HR-2a

Investigator(s): CG, CC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.420868 Long.: -77.82606 Datum: NAD 83

Soil Map Unit Name: Clymer - Cookport channery loam NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T8-01 is an upland data point located on a valve pad parking area along a pipeline access road.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T8-HR-2a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus polyphyllus* | 20 | Yes | OBL |
| 2 *Carex vulpinoidea* | 20 | Yes | OBL |
| 3 *Carex granularis* | 15 | Yes | FACW |
| 4 *Eleocharis palustris* | 5 | No | OBL |
| 5 *Carex scoparia* | 5 | No | FACW |
| 6 *Potentilla simplex* | 5 | No | FACU |
| 7 *Solidago rugosa* | 5 | No | FAC |
| 8 | | | |
| | 75 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-T8-HR-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5" | 10YR4/3 | 100 | | | | | Clay | Compacted Soil |
| 5" | | | | | | | | Rock |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 5"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W7-T5-HR-1a

Investigator(s): JH, DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): Concave Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.413032 Long.: -77.834408 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Disturbed, PEM

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water at top of pit.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W7-T5-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 40 | Yes | FACW |
| 2 *Phalaris arundinacea* | 20 | Yes | FACW |
| 3 *Carex vulpinoidea* | 20 | Yes | FACW |
| 4 *Carex sp.* | 20 | Yes | OBL-UPL |
| 5 *Potentilla pensylvanica* | 5 | No | FACU |
| 6 | 5 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = 0.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W7-T5-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 85 | 7.5YR 5/6 | 15 | C | M | | Rock Refusal |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 0-8"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W7-T5-HR-1c

Investigator(s): KC, DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): Concave Slope (%): NA

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.412771 Long.: -77.835453 Datum: NAD 83

Soil Map Unit Name: Atkins silt loam - At NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: PFO wetland along a gravel access road

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W7-T5-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 30 | Yes | FAC |
| 2 *Tsuga canadensis** | 30 | Yes | FAC |
| 3 *Pinus strobus* | 30 | Yes | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 90 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Tsuga canadensis** | 30 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 30 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Osmundastrum cinnamomeum* | 50 | Yes | FACW |
| 2 *Onoclea sensibilis* | 30 | Yes | FACW |
| 3 *Dichanthelium scabriusculum* | 30 | Yes | OBL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 85.71% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: * The eastern hemlocks displayed morphological adaptations.

## SOIL

**Sampling Point:** W7-T5-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR 4/1 | 80 | 7.5YR 5/6 | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W8-T5-HR-1b

Investigator(s): JH, DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): NA

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.412977 Long.: -77.835114 Datum: NAD 83

Soil Map Unit Name: Atkins silt loam - At NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W8-T5-HR-1b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Alnus incana* | 70 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 70 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Osmundastrum cinnamomeum* | 40 | Yes | FACW |
| 2 *Dichanthelium clandestinum* | 30 | Yes | FAC |
| 3 *Carex sp.* | 20 | No | - |
| 4 *Onoclea sensibilis* | 10 | No | FACW |
| 5 *Rubus hispidus* | 10 | No | FACW |
| 6 *Phalaris arundinacea* | 10 | No | FACW |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W8-T5-HR-1b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 8-12" | 10YR 4/1 | 80 | 7.5YR 5/6 | 20 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W6-T5-HR-1c

Investigator(s): KC, DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.414881 Long.: -77.834841 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: PFO

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | ___ | Depth (inches): ___ |
| Water table present? | Yes | X | No | ___ | Depth (inches): 0" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W6-T5-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis ** | 40 | Yes | FAC |
| 2 | *Pinus strobus* | 25 | Yes | FACU |
| 3 | *Acer rubrum* | 20 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 85 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis** | 20 | Yes | FAC |
| 2 | *Alnus incana* | 5 | No | FACU |
| 3 | *Pinus strobus* | 2 | No | FACU |
| 4 | *Crataegus monogyna* | 1 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 28 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | - |
| 2 | *Carex sp.* | 20 | Yes | OBL-UPL |
| 3 | *Onoclea sensibilis* | 15 | Yes | FACW |
| 4 | *Carex intumescens* | 10 | No | FACW |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 45 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = ##

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: *Eastern hemlocks morphed adaptation. 50% coverage by *Sphagnum sp*

## SOIL

**Sampling Point:** W6-T5-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR 4/2 | 90 | 10YR 5/8 | 10 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/24/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T5-HR-1c

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 8-25%

Subregion (LRR or MLRA): LRR N Lat.: 41.41503 Long.: -77.83378 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam, extremely stony (CpD) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): 5"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T5-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Betula alleghaniensis* | 15 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 15 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dryopteris marginalis* | 5 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 5 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 15 | x 3 = | 45 | |
| FACU species | 5 | x 4 = | 20 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 20 | (A) | 65 | (B) |

Prevalence Index = B/A = 3

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: Sparsley vegetated compared to surface

## SOIL

**Sampling Point:** W1-T5-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR 2/1 | | | | | | | |
| 3-15" | 10YR 4/2 | 95 | 7.5YR 5/8 | 5 | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T5-HR-1a

Investigator(s): DW, KL Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): ____

Subregion (LRR or MLRA): LRR N Lat.: 41.415073 Long.: -77.834311 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam, extremely stony (CpD) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ____ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ____

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ____

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ____ No X Depth (inches): ____

Water table present? Yes ____ No x Depth (inches): ____

Saturation present? Yes X No ____ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ____

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T5-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Sphagnum sp.* | 50 | Yes | - |
| 2 *Rubus hispidus* | 30 | Yes | FACW |
| 3 *Onoclea sensibilis* | 20 | No | FACW |
| 4 *Carex sp.* | 20 | No | OBL-UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = ##

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W2-T5-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/1 | 85 | 10YR 5/6 | 15 | C | M | | Iron Staining, Oxidized Roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T5-HR-1a

Investigator(s): DW, KL Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.414979 Long.: -77.834164 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W3-T5 is a PEM wetland located near an existing access road.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T5-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 40 | Yes | FACW |
| 2 *Sphagnum* | 30 | - | OBL-UPL |
| 3 *Grass sp.* | 10 | No | OBL-UPL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 40 | x 2 = | 80 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 40 | (A) | 80 | (B) |

Prevalence Index = B/A = 2

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W3-T5-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/2 | 85 | 10YR 5/8 | 15 | C | M | | Iron Staining, Oxidized Roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-T5-HR-1c

Investigator(s): DW, KC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%):

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.415072 Long.: -77.834147 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T5-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Pinus strobus* | 40 | Yes | FACU |
| 2 | *Tsuga canadensis* | 30 | Yes | FACU |
| 3 | *Acer rubrum* | 20 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 90 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Prunus serotina* | 30 | Yes | FACU |
| 2 | *Tsuga canadensis* | 15 | Yes | FACU |
| 3 | *Pinus strobus* | 5 | No | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 50 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Mitchella repens* | 15 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 15 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 16.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 20 | x 3 = | 60 | |
| FACU species | 135 | x 4 = | 540 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 155 | (A) | 600 | (B) |

Prevalence Index = B/A = 3.87

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-T5-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | | | | | | | organic |
| 2-3" | 10YR 3/2 | | | | | | sandy loam | |
| 3-14" | 10YR 5/6 | | | | | | sandy loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W5-T5-HR-1a

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.414631 Long.: -77.836079 Datum: NAD 83

Soil Map Unit Name: Atkins Silt Loam - At NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: PEM wetland located along an access road.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 1"

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W5-T5-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 60 | Yes | FACW |
| 2 *Solidago canadensis* | 20 | Yes | FACU |
| 3 *Glyceria sp.* | 10 | No | OBL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 10 | x 1 = | 10 | |
| FACW species | 60 | x 2 = | 120 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 20 | x 4 = | 80 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 90 | (A) | 210 | (B) |

Prevalence Index = B/A = 2.33

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W5-T5-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR 4/3 | | | | | | sandy loam | |
| 4-12" | 10YR 4/2 | 85 | 7.5YR 5/6 | 15 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W5-T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.419839 Long.: -77.829755 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W5-T6-HR-1a is located within a small PEM wetland fed by runoff from a mountain side on a flat area on a pipeline ROW.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): <1" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): Surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W5-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Salix nigra* | 2 | No | OBL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 2 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex scoparia* | 40 | Yes | FACW |
| 2 *Juncus effusus* | 30 | Yes | FACW |
| 3 *Carex lurida* | 20 | Yes | OBL |
| 4 *Scirpus cyperinus* | 5 | No | FACW |
| 5 *Equisetum hyemale* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W5-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR4/2 | 98 | 10YR5/6 | 2 | C | M | Clay Loam | |
| 6-12" | 5YR4/2 | 95 | 10YR4/6 | 5 | C | M | Gravelly Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W6-T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.419836 Long.: -77.830854 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W6-T6-HR-1a is located within a small PEM wetland located on an old logging road near a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W6-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus cyperinus* | 50 | Yes | FACW |
| 2 *Carex stricta* | 40 | Yes | OBL |
| 3 *Juncus effusus* | 5 | No | FACW |
| 4 *Scirpus atrovirens* | 5 | No | OBL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W6-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR4/2 | 98 | 10YR5/6 | 2 | C | M | Gravelly Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W6-T6-HR-1a

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2-5%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.419675 Long.: -77.830526 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W6-T6-HR is an upland data point located on the edge of a pipeline ROW.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W6-T6-HR-1a

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 25 | Yes | FAC |
| 2 | *Prunus serotina* | 15 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 40 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Schedonorus arundinaceus* | 40 | Yes | FACU |
| 2 | *Euthamia graminifolia* | 25 | Yes | FAC |
| 3 | *Dichanthelium clandestinum* | 20 | Yes | FAC |
| 4 | *Rubus flagellaris* | 5 | No | FACU |
| 5 | *Apocynum cannabinum* | 5 | No | FACU |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 95 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 60.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 70 | x 3 = | 210 |
| FACU species | 65 | x 4 = | 260 |
| UPL species | | x 5 = | |
| Column totals | 135 (A) | | 470 (B) |

Prevalence Index = B/A = 3.48

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- x 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W6-T6-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR4/3 | 100 | | | | | Gravelly clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T7a-HR-1a

Investigator(s): JH, DW Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.419896 Long.: -77.831392 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W1-T7a-1a is a PEM wetland located within the existing pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes X | No ___ | Depth (inches): 0" | |
| Water table present? | Yes X | No ___ | Depth (inches): 0" | **Wetland hydrology present?** Yes X No ___ |
| Saturation present? (includes capillary fringe) | Yes X | No ___ | Depth (inches): 0" | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T7a-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 40 | Y | FAC |
| 2 *Dicanthelium clandestinum* | 20 | Y | FAC |
| 3 *Carex sp.* | 10 | N | OBL-UPL |
| 4 *Solidago sp.* | 10 | N | OBL-UPL |
| 5 *Potentilla reptans* | 10 | N | UPL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T7a-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR 4/2 | 95 | 5YR 5/6 | 5 | C | M | gravelly loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/29/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W2-T7a-HR-1c

Investigator(s): JH, DW Section, Township, Range: LeidyTownship

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Concave Slope (%): 8-25%

Subregion (LRR or MLRA): Lat.: 41.419973 Long.: -77.83194 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam, extremely stony (CpD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W2-T7-1c is a PFO wetland located on the edge of the existing pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes X | No | ___ | Depth (inches): | 0" |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): | 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T7a-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 60 | Yes | FAC |
| 2 *Tsuga canadensis* | 30 | Yes | FAC* |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 90 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Osmundastrum cinnamomeum* | 60 | Y | FACW |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 60 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet) Morphological adaptations on Tsuga canadensis

## SOIL

**Sampling Point:** W2-T7a-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 7.5YR 3/2 | | | | | | Silt Loam | |
| 3-12" | 7.5YR 5/2 | 70 | 7.5YR 5/8 | 30 | C | M | Clay Loam | Iron/Manganese Masses Present |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- X Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/25/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-HR-2a

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): linear Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.415692 Long.: -77.834856 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Data point was taken in a PEM portion of the Tamarack Swamp

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 12"

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-2a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex crinita* | 45 | Yes | OBL |
| 2 *Juncus effusus* | 25 | Yes | FACW |
| 3 *Onoclea sensibilis* | 15 | No | FACW |
| 4 *Dichanthelium clandestinum* | 15 | No | OBL |
| 5 *Sphagnum sp.* | 2 | No | OBL-UPL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 102 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 60 | x 1 = | 60 | |
| FACW species | 40 | x 2 = | 80 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 100 | (A) | 140 | (B) |

Prevalence Index = B/A = 1

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W4-T5-HR-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | | | | | | Clay loam | |
| 8-14" | 10YR 5/1 | 70 | 10YR 5/8 | 30 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-HR-3b

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): linear Slope (%): 8-25%

Subregion (LRR or MLRA): LRR N Lat.: 41.415624 Long.: -77.834993 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: PEM1E

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: PSS portion of the Tamarack Swamp

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 12"

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-3b

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Picea rubens* | 5 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 5 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Alnus incana* | 70 | Yes | FACU |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Carex crinita* | 30 | Yes | OBL |
| 2 | *Rubus hispidus* | 20 | Yes | FACW |
| 3 | *Carex stipata* | 15 | Yes | OBL |
| 4 | *Scirpus atrovirens* | 10 | No | OBL |
| 5 | *Glyceria grandis* | 10 | No | OBL |
| 6 | *Impatiens capensis* | 10 | No | FACW |
| 7 | *Sphagnum sp.* | 5 | No | OBL-UPL |
| 8 | | | | |
| | | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 60.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = ##

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W4-T5-HR-3b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | | | | | | Clay loam | |
| 8-14" | 10YR 5/1 | 70 | 10YR 5/8 | 30 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-HR-3c

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): linear Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.415519 Long.: -77.834745 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? X<br>Hydric soil present? X<br>Wetland hydrology present? X | **Is the sampled area within a wetland?** Yes ___ No ___ |

Remarks: PFO portion of the Tamarack Swamp

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): ___ | |
| Water table present? | Yes X | No | ___ | Depth (inches): 0" | |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): 0" | |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-3c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 65 | Yes | FAC* |
| 2 | *Betula nigra* | 20 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 85 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Osmundastrum cinnamomeum* | 20 | Yes | FACW |
| 2 | *Glyceria grandis* | 10 | Yes | OBL |
| 3 | *Sphagnum sp.* | 20 | Yes | OBL-UPL |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 50 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = ##

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: * Eastern hemlock displayed morphological adaptations - Buttressed Roots

## SOIL

**Sampling Point:** W4-T5-HR-3c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | | | | | | Organic | |
| 2-4" | 10YR 3/2 | | | | | | | |
| 4-14" | 10YR 5/1 | 75 | 10YR 5/8 | 25 | C | M | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-HR-1b

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.41599 Long.: -77.834307 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: Shrub upland

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-HR-1b

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Prunus serotina* | 20 | Yes | FACU |
| 2 | *Malus sp.* | 10 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 30 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Alnus incana* | 60 | Yes | FACU |
| 2 | *Crataegus sp.* | 20 | Yes | OBL-UPL |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Potentilla pensylvanica* | 15 | Yes | FACU |
| 2 | *Rubus hispidus* | 15 | Yes | FACW |
| 3 | *Solidago sp.* | 15 | Yes | OBL-UPL |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 45 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 42.86% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 15 | x 3 = | 45 |
| FACU species | 105 | x 4 = | 420 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 135 (A) | | 495 (B) |

Prevalence Index = B/A = 3.67

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W4-T5-HR-1b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/3 | | | | | | Silty loam | |
| 8-14" | 7.5YR 5/6 | | | | | | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-HR-2c

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): convex Slope (%): 8-25%

Subregion (LRR or MLRA): LRR N Lat.: 41.415371 Long.: -77.834914 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam, extremely stony (CpD) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? Yes

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No x

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No ___ Depth (inches): ___

Water table present? Yes ___ No ___ Depth (inches): ___

Saturation present? Yes ___ No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-HR-2c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 80 | Yes | FACU |
| 2 | *Pinus strobus* | 20 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Vaccinium angustifolium* | 40 | Yes | FACU |
| 2 | *Mitchella repens* | 15 | Yes | FACU |
| 3 | *Tsuga canadensis* | 5 | No | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 60 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 160 | x 4 = | 640 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 160 | (A) | 640 | (B) |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP-W4-T5-HR-2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 10YR 2/1 | | | | | | organic | |
| 7-18" | 10YR 7/1 | 80 | 10YR 4/3 | 20 | | | clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-HR-2c

Investigator(s): DW, KC Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.418827 Long.: -77.833305 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: PFO

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 3"

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-2c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Larix laricina* | 70 | Yes | FACW |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Crataegus sp.* | 30 | Yes | OBL-UPL |
| 2 | *Prunus serotina* | 20 | Yes | FACU |
| 3 | *Acer rubrum* | 20 | Yes | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 70 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Microstegium vimineum* | 60 | Yes | FAC |
| 2 | *Sphagnum sp.* | 50 | Yes | OBL-UPL |
| 3 | *Rubus hispidus* | 30 | Yes | FACW |
| 4 | *Crataegus sp.* | 10 | No | OBL-UPL |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 150 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 57.14% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = 0.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W4-T5-HR-2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | | | | | | Organic | |
| 2-3" | 10YR 3/2 | | | | | | Clay loam | |
| 3-5" | 10YR 4/2 | 80 | 10YR 5/8 | 20 | C | M | | |
| 5-14" | 10YR 5/6 | 70 | 10YR 5/8 | 30 | C | M | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-HR-3a

Investigator(s): DW, KC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 8-25%

Subregion (LRR or MLRA): MRLA 127 Lat.: 41.418777 Long.: -77.83311 Datum: NAD 83

Soil Map Unit Name: Cookport channery loam - CpD NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? No

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: Border line

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-HR-3a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Vaccinium corymbosum* | 5 | Yes | FACW |
| 2 *Hamamelis virginiana* | 5 | Yes | FACU |
| 3 *Crataegus sp.* | 5 | Yes | OBL-UPL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 15 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 70 | Yes | FAC |
| 2 *Osmundastrum cinnamomeum* | 40 | Yes | FACW |
| 3 *Rubus hispidus* | 10 | No | FACW |
| 4 *Solidago sp.* | | | OBL-UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 55 | x 2 = | 110 | |
| FAC species | 70 | x 3 = | 210 | |
| FACU species | 5 | x 4 = | 20 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 130 | (A) | 340 | (B) |

Prevalence Index = B/A = 3

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** UP-W4-T5-HR-3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | | | | | | | |
| 2-4" | 10YR 3/3 | | | | | | | |
| 4-14" | 10YR 5/8 | 80 | 10YR 5/8 | 20 | C | M | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/29/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-HR-2a

Investigator(s): DW, JH Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.420121 Long.: -77.833848 Datum: NAD 83

Soil Map Unit Name: Hustontown silt loam - HuB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: Upland in ROW

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-HR-2a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Vaccinium angustifolium* | 60 | Yes | FACU |
| 2 *Carex sp.* | 20 | No | OBL-UPL |
| 3 *Solidago sp.* | 10 | No | OBL-UPL |
| 4 *Rubus flagellaris* | 10 | No | FACU |
| 5 *Potentilla pensylvanica* | 10 | No | FACU |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 80 | x 4 = | 320 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 80 | (A) | 320 | (B) |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W4-T5-HR-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-9" | 10YR 4/3 | 85 | 7.5YR 4/6 | 15 | C | M | | |
| 9-12" | 10YR 5/6 | 100 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No x

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/10/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W4-T5-HR-1b

Investigator(s): CG, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.421237 Long.: -77.842276 Datum: NAD 83

Soil Map Unit Name: Hustontown silt loam (HuB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W4-T5-HR-1b is in a PSS portion of the wetland located on an old pipeline ROW within the Tamarack swamp.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1

Water table present? Yes X No ___ Depth (inches): Surface

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-1b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Alnus serrulata* | 50 | Yes | OBL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 50 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex stipata* | 40 | Yes | OBL |
| 2 *Juncus effusus* | 20 | Yes | FACW |
| 3 *Scirpus cyperinus* | 10 | No | FACW |
| 4 *Verbena hastata* | 5 | No | FACW |
| 5 *Solidago rugosa* | 5 | No | FAC |
| 6 *Agrostis scabra* | 5 | No | FAC |
| 7 | | | |
| 8 | | | |
| | 85 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W4-T5-HR-1b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12+ | 5YR4/2 | 98 | 7.5YR4/6 | 2 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/11/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-HR-1c

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): convex Slope (%): 8-25%

Subregion (LRR or MLRA): LRR N Lat.: 41.426307 Long.: -77.843263 Datum: NAD 83

Soil Map Unit Name: Freetown mucky pete (Fr) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No x

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No ___ Depth (inches): ___

Water table present? Yes ___ No ___ Depth (inches): ___

Saturation present? Yes ___ No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Prunus serotina* | 70 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 70 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Prunus serotina* | 40 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 40 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Poaceae sp.* | 50 | Yes | FACU |
| 2 *Carex sp.* | 20 | Yes | FACU |
| 3 *Vaccinium angustifolium* | 20 | Yes | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 40.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** UP-W4-T5-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | Silt loam | old spoil pile |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/10/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W4-T5-HR-2b

Investigator(s): DW, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.426238 Long.: -77.843567 Datum: NAD 83

Soil Map Unit Name: Freetown mucky pete (Fr) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W4-T5-HR-2b is in a PSS portion of the wetland located on an old pipeline ROW within the Tamarack swamp.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): <1

Water table present? Yes X No ___ Depth (inches): Surface

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-2b

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Salix discolor* | 60 | Yes | FACW |
| 2 *Spirea tomentosa* | 20 | Yes | FACW |
| 3 *Alnus serrulata* | 20 | Yes | OBL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phalaris arundinacea* | 80 | Yes | FACW |
| 2 *Carex sp.* | 20 | Yes | OBL-UPL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W4-T5-HR-2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 2/1 | | | | | | Organic | |
| 2-4" | Gley1 3/N | 100 | | | | | Clay loam | |
| 4-12" | Gley1 6-5G | 70 | 5YR 5/4 | 30 | D | M | Clay loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
X Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/10/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-HR-1a

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): linear Slope (%): 8-25%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.426314 Long.: -77.84362 Datum: NAD 83

Soil Map Unit Name Freetown mucky pete- Fr NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Data point was taken in a PEM portion of the Tamarack Swamp

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 2"

Water table present? Yes X No ___ Depth (inches): surface

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Spirea tomentosa* | 10 | Yes | FACW |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 10 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phalaris arundinacea* | 60 | Yes | FACW |
| 2 *Juncus effusus* | 40 | Yes | FACW |
| 3 *Scirpus atrovirens* | 10 | No | OBL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | 0 | |
| FACW species | | x 2 = | | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W4-T5-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/1 | 80 | 7.5YR 5/6 | 20 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- X Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/10/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W4-T5-HR-1c

Investigator(s): DW, PD Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.426245 Long.: -77.84397 Datum: NAD 83

Soil Map Unit Name: Hustontown silt loam - HuB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: PFO wetland edge of the Tamarack swamp.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W4-T5-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 50 | Yes | FAC |
| 2 | *Prunus serotina* | 50 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Alnus serrulata* | 20 | Yes | OBL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Osmundastrum cinnamomea* | 50 | Yes | FACW |
| 2 | *Carex sp.* | 10 | No | OBL-UPL |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 60 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = 0.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W4-T5-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | 10YR 3/1 | 100 | | | | | Organic | |
| 2-12" | 10YR 4/1 | 70 | 7.5YR 5/6 | 30 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 04/10/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W4-T5-HR-1a

Investigator(s): DW, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): MRLA 127 Lat.: 41.426532 Long.: -77.843826 Datum: NAD 83

Soil Map Unit Name: Hustontown silt loam - HuB NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes ___ No x (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes ___ No X

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: Upland point near the northwestern edge of the Tamarack swamp.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No Hydrology present

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W4-T5-HR-3a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Schizachyrium scoparium* | 50 | Yes | FACU |
| 2 *Poacaea sp.* | 20 | Yes | OBL-UPL |
| 3 *Rubus flagellaris* | 20 | Yes | FACU |
| 4 *Solidago sp.* | 10 | No | OBL-UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 0 | (A) | 0 | (B) |

Prevalence Index = B/A = #DIV/0!

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-W4-T5-HR-3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR4/3 | 100% | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 5/2/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T7a-HR-1a

Investigator(s): JH, DW Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.415902 Long.: -7.841187 Datum: NAD 83

Soil Map Unit Name: Hazleton-Laidig complex - HoF NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T7a-HR-1a is an upland data point located along an existing ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T7a-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Apocynum cannabinum* | 30 | Yes | FACU |
| 2 *Dennstaedtia punctilobula* | 30 | Yes | FACU |
| 3 *Dactylis glomerata* | 30 | Yes | FACU |
| 4 *Pteridium aquilinum* | 10 | No | FACU |
| 5 *Potentilla simplex* | 5 | No | FACU |
| 6 *Viola blanda* | 5 | No | FACW |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | 5 | x 2 = | 10 | |
| FAC species | | x 3 = | | |
| FACU species | 105 | x 4 = | 420 | |
| UPL species | | x 5 = | | |
| Column totals | 110 | (A) | 430 | (B) |

Prevalence Index = B/A = 3.90

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** UP-T7a-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 5YR4/3 | 100 | | | | | Gravelly Silt Loam | |
| 10" | | | | | | | | Rock fragments |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 10"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/11/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T2-HR-1c

Investigator(s): CG, CC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 in LRRN Lat.: 41.421158 Long.: -77.842937 Datum: NAD 83

Soil Map Unit Name: Ungers loam (UnB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: UP-T2-W3 is an upland data point located on a pipeline ROW. | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-T2-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Pinus strobus* | 5 | Yes | FACU |
| 2 *Prunus serotina* | 5 | Yes | FACU |
| 3 *Pseudotsuga menziesii* | 1 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 11 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Rosa multiflora* | 5 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 5 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phleum pratense* | 70 | Yes | FACU |
| 2 *Euthamia graminifolia* | 15 | No | FAC |
| 3 *Dactylis glomerata* | 10 | No | FACU |
| 4 *Rubus arvensis* | 5 | No | FAC |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 95 | x 4 = | 380 |
| UPL species | | x 5 = | |
| Column totals | 115 (A) | | 440 (B) |

Prevalence Index = B/A = 3.82

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-T2-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR3/3 | 100 | | | | | Sandy Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/11/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W3-T1-HR-1a

Investigator(s): CG, CC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 in LRRN Lat.: 41.422089 Long.: -77.8476 Datum: NAD 83

Soil Map Unit Name: Ungers Loam (UnB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W4-T1-HR is a PEM wetland located on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T1-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex stipata* | 50 | Yes | OBL |
| 2 *Juncus effusus* | 40 | Yes | FACW |
| 3 *Scirpus cyperinus* | 10 | No | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T1-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR4/2 | 80 | 10YR4/6 | 20 | C | M | Clay loam | |
| 8-12" | 10YR3/4 | 90 | 10YR4/6 | 10 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 6/13/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W3-T1-HR-2c

Investigator(s): CG, CB Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.421926 Long.: -77.847777 Datum: NAD 83

Soil Map Unit Name Ungers Loam (UnB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W3-T1-HR is a PFO wetland located adjacent to a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes X | No | ___ | Depth (inches): | 4" |
| Saturation present? (includes capillary fringe) | Yes X | No | ___ | Depth (inches): | Surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T1-HR-2c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 15 | Yes | FAC |
| 2 | *Carpinus caroliniana* | 10 | Yes | FAC |
| 3 | *Tsuga canadensis* | 5 | No | FACU |
| 4 | *Picea rubens* | 5 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 35 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Rosa multiflora* | 15 | Yes | FACU |
| 2 | *Tsuga canadensis* | 5 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 20 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Glyceria striata* | 25 | Yes | OBL |
| 2 | *Impatiens capensis* | 20 | Yes | FACW |
| 3 | *Onoclea sensibilis* | 15 | No | FACW |
| 4 | *Carex lurida* | 10 | No | OBL |
| 5 | *Osmunda cinnamomea* | 10 | No | FACW |
| 6 | *Juncus effusus* | 5 | No | FACW |
| 7 | *Scirpus cyperinus* | 5 | No | OBL |
| 8 | | | | |
| | | 90 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T1-HR-2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR4/2 | 95 | 10YR4/6 | 5 | C | M | Clay | |
| 8-16" | 10YR4/4 | 90 | 10YR5/6 | 10 | C | M | Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/11/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W3-T1-HR-1c

Investigator(s): DW, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 3-8%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.422905 Long.: -77.847352 Datum: NAD 83

Soil Map Unit Name: Hustontown silt loam (HuB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W3-T1-HR-1c is a PFO wetland located adjacent to a pipeline ROW.

### HYDROLOGY

| Primary Indicators (minimum of one is required; check all that apply) | | Secondary Indicators (minimum of two required) |
|---|---|---|
| ___ Surface Water (A1) | ___ True Aquatic Plants (B14) | ___ Surface Soil Cracks (B6) |
| ___ High Water Table (A2) | ___ Hydrogen Sulfide Odor (C1) | ___ Sparsley Vegetated Concave Surface |
| X Saturation (A3) | ___ Oxidized Rhizospheres on Living Roots (C3) | X Drainage Patterns (B10) |
| ___ Water Marks (B1) | ___ Presence of Reduced Iron (C4) | ___ Moss Trim Lines (B16) |
| ___ Sediment Deposits (B2) | ___ Recent Iron Reduction in Tilled Soils (C6) | ___ Dry-Season Water Table (C2) |
| X Drift Deposits (B3) | ___ Thin Muck Surface (C7) | ___ Crayfish Burrows (C8) |
| ___ Algal Mat or Crust (B4) | ___ Other (Explain in Remarks) | ___ Saturation Visible on Aerial Imagery (C9) |
| ___ Iron Deposits (B5) | | ___ Stunted or Stressed Plants (D1) |
| ___ Inundation Visible on Aerial Imagery (B7) | | ___ Geomorphic Position (D2) |
| ___ Water-Stained Leaves (B9) | | ___ Shallow Aquitard (D3) |
| ___ Aquatic Fauna (B13) | | ___ Microtopographic Relief (D4) |
| | | ___ FAC-Neutral Test (D5) |

| Field Observations: | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** | Yes X No ___ |
| Saturation present? (includes capillary fringe) | Yes X | No ___ | Depth (inches): Surface | | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T1-HR-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 50 | Yes | FAC* |
| 2 | *Acer rubrum* | 20 | Yes | FAC |
| 3 | *Quercus alba* | 10 | No | FACU |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Scirpus cyperinus* | 25 | Yes | FACW |
| 2 | *Persicaria sagittata* | 20 | Yes | OBL |
| 3 | *Poaceae sp.* | 20 | Yes | OBL-UPL |
| 4 | *Microstegium vimineum* | 10 | No | FAC |
| 5 | *Rubus hispidus* | 10 | No | FACW |
| 6 | *Solidago sp.* | 10 | No | OBL-UPL |
| 7 | | | | |
| 8 | | | | |
| | | 95 | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- X 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet) * morphological adaptations on the eastern hemlocks

## SOIL

**Sampling Point:** W3-T1-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 10YR4/2 | 95 | 7.5YR5/8 | 5 | C | M | silt loam | |
| 7-12" | 7.5YR5/4 | 80 | 7.5YR5/8 | 20 | C | M | clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/11/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W3-T1-HR-1a

Investigator(s): DW, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 in LRRN Lat.: 41.422262 Long.: -77.847596 Datum: NAD 83

Soil Map Unit Name: Ungers loam (UnB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W3-T1-HR-1a is an upland data point located on a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3-T1-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phleum pratense* | 80 | Yes | FACU |
| 2 *Rubus flagellaris* | 10 | No | FACU |
| 3 *Daucus carota* | 5 | No | UPL |
| 4 *Schizachyrium scoparium* | 5 | No | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 85 | x 4 = | 340 |
| UPL species | 5 | x 5 = | 25 |
| Column totals | 100 (A) | | 395 (B) |

Prevalence Index = B/A = 3.95

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W3-T1-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 7.5YR4/3 | 100 | | | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/11/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W3-T1-HR-1c

Investigator(s): CG, CC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 in LRRN Lat.: 41.422894 Long.: -77.84736 Datum: NAD 83

Soil Map Unit Name Hustontown Silt Loam (HuB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T1-W3 is an upland data point located in the woods near a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3-T1-HR-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Tsuga canadensis* | 80 | Yes | FACU |
| 2 *Acer rubrum* | 10 | No | FAC |
| 3 *Quercus alba* | 10 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Tsuga canadensis* | 40 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 40 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 130 | x 4 = | 520 |
| UPL species | | x 5 = | |
| Column totals | 140 (A) | | 550 (B) |

Prevalence Index = B/A = 3.92

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W3-T1-HR-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2" | | | | | | | | organic |
| 2-8" | 10YR3/4 | 100 | | | | | Clay Loam | |
| 8-12" | 7.5YR4/4 | 100 | | | | | Clay Loam | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/10/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W2-T2-HR-1a

Investigator(s): CG, CC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.425108 Long.: -77.848698 Datum: NAD 83

Soil Map Unit Name: Atkins Silt Loam (At) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

T2-W2 is a PEM wetland associated with a depression in the landscape.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T2-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Osmundastrum cinnamomea* | 20 | Yes | FACW |
| 2 *Juncus effusus* | 20 | Yes | FACW |
| 3 *Dulichium arundinaceum* | 20 | Yes | OBL |
| 4 *Scirpus atrovirens* | 10 | No | OBL |
| 5 *Carex sp* | 10 | No | OBL-UPL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T2-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 90 | 7.5YR 5/6 | 10 | C | M | SiL | |
| 6-12" | 10YR 4/2 | 60 | 7.5YR 5/4 | 40 | C | M | SiL | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

X Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/10/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W2-T2-HR-1a

Investigator(s): CG, CC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Gradual slope Local relief (concave, convex, none): None Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.425079 Long.: -77.848634 Datum: NAD 83

Soil Map Unit Name: Hustontown silt loam (HuB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-T2-W2 is an upland forested point located adjacent to a pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2-T2-HR-1a

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 15 | Yes | FACU |
| 2 | *Pinus strobus* | 10 | Yes | FACU |
| 3 | *Prunus serotina* | 5 | No | FACU |
| 4 | *Acer rubrum* | 5 | No | FAC |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 35 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Dennstaedtia punctilobula* | 80 | Yes | FACU |
| 2 | *Euthamia graminifolia* | 5 | No | FAC |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 85 | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | 10 | x 3 = | 30 | |
| FACU species | 110 | x 4 = | 440 | |
| UPL species | | x 5 = | | |
| Column totals | 120 | (A) | 470 | (B) |

Prevalence Index = B/A = 3.91

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W2-T2-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 7.5YR4/2 | 100 | | | | | Clay loam | |
| 6-12" | 7.5YR4/4 | 100 | | | | | Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Replacement City/County: Clinton County Sampling Date: 4/10/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T1-HR-1a

Investigator(s): CG, CC Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-3%

Subregion (LRR or MLRA): MLRA 127 Lat.: 41.426027 Long.: -77.849739 Datum: NAD 83

Soil Map Unit Name: Atkins silt loam (At) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W1-T1-HR-1a is located within the PEM portion of W1-T1 is a PEM, PSS, PFO wetland complex that flows over a gas pipeline with disturbed soils and receives water from drainage off a pump station.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 3"

Water table present? Yes X No ___ Depth (inches): Surface

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T1-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex vulpinoidea* | 60 | Yes | OBL |
| 2 *Scirpus cyperinus* | 15 | No | FACW |
| 3 *Juncus effusus* | 15 | No | FACW |
| 4 *Rumex crispus* | 5 | No | FAC |
| 5 *Carex scoparia* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column totals | (A) | | (B) |

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T1-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR4/2 | 98 | 10YR4/6 | 2 | C | M | Gravelly Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 4/10/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-W1-T1HR-1a

Investigator(s): DW, PD Section, Township, Range: Leidy Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.426347 Long.: -77.849903 Datum: NAD 83

Soil Map Unit Name Atkins silt loam (At) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: UP-T1-W1-HR-1a is an upland data point located on a convex near W1-T1-HR

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W1-T1-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 15 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Pleum pratense* | 80 | Yes | FACU |
| 2 *Carex sp.* | 5 | No | FACU |
| 3 *Fragaria virginiana* | 2 | No | FACU |
| 4 *Prunella vulgaris* | 1 | No | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 105 | x 4 = | 420 |
| UPL species | | x 5 = | |
| Column totals | 105 (A) | | 420 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP-W1-T1-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR4/3 | 90 | 7.5YR 5/8 | 10 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 5/17/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T10-HR-1a

Investigator(s): DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 3-8%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.438642 Long.: -77.828693 Datum: NAD 83

Soil Map Unit Name: Ungers loam (UnB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:W1-T10-1a is at the edge of a prevously disturbed log landing site.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T10-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus cyperinus* | 40 | Yes | FACW |
| 2 *Poa trivialis* | 30 | Yes | FACW |
| 3 *Onoclea sensibilis* | 10 | No | FACW |
| 4 *Comptonia peregrina* | 5 | No | UPL |
| 5 *Acer rubrum* | 2 | No | FAC |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 87 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T10-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 5YR4/2 | 90 | 7.5YR 5/8 | 10 | C | M | Gravelly Silt Loam | |
| 6-14" | 7.5YR 4/3 | 100 | | | | | Gravelly Silt Loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)

___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South - Hensel Loop City/County: Clinton County Sampling Date: 5/17/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point Up-W1-T10-HR-1a

Investigator(s): DW Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 3-8%

Subregion (LRR or MLRA): MLRA127 Lat.: 41.438785 Long.: -77.828736 Datum: NAD 83

Soil Map Unit Name: Ungers loam (UnB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:UP-W1-T10-1a is within prevously disturbed log landing site.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): Surface

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up-W1-T10-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Comptonia peregrina* | 50 | Yes | UPL |
| 2 *Potentilla simplex* | 20 | Yes | FACU |
| 3 *Poa trivialis* | 20 | Yes | FACW |
| 4 *Pinus resinosa* | 2 | No | FACU |
| 5 *Acer rubrum* | 2 | No | FAC |
| 6 *Pinus strobus* | 1 | No | FACU |
| 7 | | | |
| 8 | | | |
| | 95 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** Up-W1-T10-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 5YR4/3 | 100 | | | | | Gravelly shale | refusal |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 6"

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T4-HR-1a

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat.: 41.341038 Long.: -77.706952 Datum: NAD 83

Soil Map Unit Name: Linden silt loam, rarely flooded (Lr) NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: Roadside drainage ditch

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- x FAC-Neutral Test (D5)

Field Observations:

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | 0" |
| Water table present? | Yes | ___ | No | ___ | Depth (inches): | 0" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 3" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Roadside drainage ditch

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T4-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Typha latifolia* | 80 | Yes | OBL |
| 2 *Cornus sericea* | 10 | No | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W3-T4-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/1 | 85 | 7.5YR 5/6 | 15 | C | M | Gravelly silt loam | |
| 8" | | | | | | | | Rock Restriction |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8"

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project - Hilltop Loop City/County: Clinton County Sampling Date: 04/04/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W3-T4-HR-1a

Investigator(s): DW, CG Section, Township, Range: Chapman Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 41.340991 Long.: -77.705958 Datum: NAD 83

Soil Map Unit Name: Linden silt loam, rarely flooded (Lr) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: This datapoint was reviewed during the spring the USACOE and PADEP due to being a questionable area

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): 0" | |
| Water table present? | Yes ___ | No X | Depth (inches): 0" | |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): 0" | |

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3-T4-HR-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Rumex crispus* | 2 | No | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 2 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 2 | x 3 = | 6 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 2 | (A) | 6 | (B) |

Prevalence Index = B/A = 3.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: Sparse vegetation due to prior indundation during the fall; however, no water was present during the spring monitoring event.

## SOIL

**Sampling Point:** UP-W3-T4-HR-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 3/1 | 100 | | | | | Silty Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

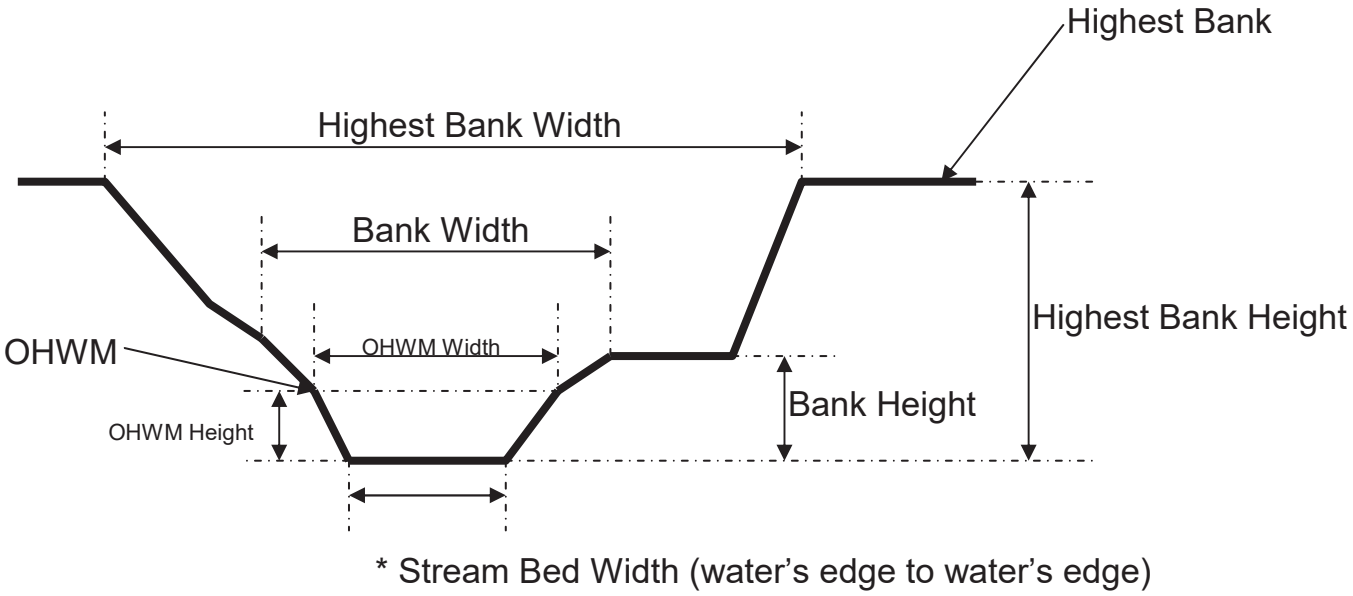
Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No x

Remarks:




*Stream bed width is variable

**DEFINITIONS:**

**Perennial:** has flowing water year-round during a typical year.

**Intermittent:** has flowing water during certain times of the year, when groundwater provides water for stream flow.

**Ephemeral:** has flowing water only during, and for a short duration after, precipitation events in a typical year.

**Run**: A reach of stream characterized by fast flowing low turbulence water.

**Riffle:** A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.

**Pool:** A reach of stream that is characterized by deep low velocity water and a smooth surface.

**STREAM ID:** S2-T8-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 06/13/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** South to North

**Width (ft) (water's edge to water's edge):** 2-3ft

**Width (ft) (bank to bank):** 3ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 1/2ft
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☐ Undercutting ☑ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Japanese stiltgrass, soft rush

**Width of riparian corridor (ft):** 5ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Flows across a pipeline ROW and through a cow pasture.

**NOTES:**
Intermittent channel that flows across a pipeline ROW and through a cow pasture.

**STREAM ID:** S11-T6-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/30/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** South to North

**Width (ft) (water's edge to water's edge):** 1ft

**Width (ft) (bank to bank):** 1-2ft
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Vegetation

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**
- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Flows across a pipeline ROW

**NOTES:**
Ephemeral channel flowing across a pipeline ROW starting from a wetland and losing defined bed and bank at recently disturbed pipeline construction area.

**STREAM ID:** S12-T6-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/30/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to South

**Width (ft) (water's edge to water's edge):** 5-12ft

**Width (ft) (bank to bank):** 7-13ft
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Salix nigra, Scirpus cyperinus, Juncus effusus

**Width of riparian corridor (ft):** 5-10ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**
- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Flows across a clear pipeline ROW

**NOTES:**
Perennial stream at the bottom of two hills and flows across a pipeline ROW.

**STREAM ID:** S9-T6-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/29/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2-8ft

**Width (ft) (bank to bank):** 3-9ftft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Salix nigra, Carex stricta, Alnus incana

**Width of riparian corridor (ft):** 3ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
If yes, list:
Fish

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☑ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☑ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Drains across a cleared pipeline ROW

**NOTES:**
Large perennial stream flowing down a slope in the woods with lots of small waterfalls and crossing a pipeline ROW

**STREAM ID:** S10-T6-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/29/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2ft

**Width (ft) (bank to bank):** 2-3ft
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~1/2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☐ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**
- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☑ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Small channel fed by a spring coming out of a hill and flows into a wetland.

**STREAM ID:** S7-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☐ UNNAMED ☑ NAMED: Paddy Run

**Date:** 4/29/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 15-20ft

**Width (ft) (bank to bank):** 20-25ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☑ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☑ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other_____

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:_____

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:_____

Highest Left Bank Height*:_____
Highest Left Bank Slope*:_____
Highest Right Bank Height*:_____
Highest Right Bank Slope*:_____
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-_____
☐ no
If yes, list:
Salix nigra, Carex stricta

**Width of riparian corridor (ft):** 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
If yes, list:
Fish

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☑ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):_____

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:_____
☑ man-altered – Explain: Drains across a cleared pipeline ROW

**NOTES:**
Large perennial stream flowing through the forest bottom and across a pipeline ROW with a small floodplain.

**STREAM ID:** S7-T6-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to South

**Width (ft) (water's edge to water's edge):** 2ft - 3ft

**Width (ft) (bank to bank):** 2ft-3ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Leaf Litter

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Cinnamon Fern

**Width of riparian corridor (ft):** 1ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Spring fed channel that flows down a hillside towards a pipeline ROW before going subsurface.

**STREAM ID:** S6-T6-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to South

**Width (ft) (water's edge to water's edge):** 1ft - 2ft

**Width (ft) (bank to bank):** 1ft-2ft
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☑ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1ft-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1ft-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Yellow Birch, Cinnamon Fern

**Width of riparian corridor (ft):** 3ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**
- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Spring fed channel that flows down a hillside towards a pipeline ROW and flows into a wetland.

**STREAM ID:** S8-T6-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to South

**Width (ft) (water's edge to water's edge):** 2ft - 3ft

**Width (ft) (bank to bank):** 2ft-3ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Leaf Litter

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Cinnamon Fern

**Width of riparian corridor (ft):** 1ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Spring fed channel that flows down a hillside towards a pipeline ROW before going subsurface.

**STREAM ID:** S8-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF,CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** South to North

**Width (ft) (water's edge to water's edge):** 2-3'

**Width (ft) (bank to bank):** 2-3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Veg and muck

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 0-0.5ft
Slope: ☑ 0-30º (4:1) ☐ 31-45º (3:1) ☐ 46-60º (2:1) ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 0-0.5ft
Slope: ☑ 0-30º (4:1) ☐ 31-45º (3:1) ☐ 46-60º (2:1) ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

Width of riparian corridor (ft): 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Small stream running downhill into S1-T7.

**STREAM ID:** S9-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CB, PF

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft

**Width (ft) (bank to bank):** 1-2 ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muck and Veg

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Moss, fern

**Width of riparian corridor (ft):** 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Culvert that goes under Hensel Fork Road

**NOTES:**
Small stream that parallels road then goes under Hensel Fork Road and through W4-T7 to flow into S1-T7.

**STREAM ID:** S10-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CB, PF

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft

**Width (ft) (bank to bank):** 1-2 ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muck and Veg

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
- ☐ yes, list ID: HB-
- ☑ no

If yes, list:

Width of riparian corridor (ft): 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
- ☐ yes, width (ft):
- ☑ no

If yes, list :

**Aquatic Vegetation**
- ☐ yes
- ☑ no

If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
- ☐ yes
- ☑ no

If yes, list:

**Riparian/Terrestrial Organisms**
- ☐ yes
- ☑ no

If yes, list:

**Stream has potential for fish presence**
- ☑ yes
- ☐ no

**T&E Species**
- ☐ yes, list ID: WL/VG-
- ☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
- ☑ natural
- ☐ manmade – Explain:
- ☑ man-altered – Explain: Culvert that goes under Hensel Fork Road

**NOTES:**

**STREAM ID:** S6-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CB, PF

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft

**Width (ft) (bank to bank):** 1-2 ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muck, Veg, Wood

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2-3 ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 2-3 ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Moss, grass

**Width of riparian corridor (ft):** 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Small stream that flows through W1-T7 and into S1-T7

**STREAM ID:** S5-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CB, PF

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 3-4 ft

**Width (ft) (bank to bank):** 3-4 ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muck, Veg, Wood

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2-3 ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2-3 ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Moss, grass

**Width of riparian corridor (ft):** 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Stream that flows through W1-T7 and into S1-T7

**STREAM ID:** S1-T8-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 06/13/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** North to South

**Width (ft) (water's edge to water's edge):** 2-3ft

**Width (ft) (bank to bank):** 3ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☑ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 1/2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:
Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Osmundastrum cinnamomeum, Galium latifolium, Carex sp.

**Width of riparian corridor (ft):** 3ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☑ yes, list ID: WL/VG- VG
☐ no

Galium latifolium

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Stream goes subsurface when it hits pipeline ROW

**NOTES:**
Ephemeral channel originating from a spring and flows down a slope and goes subsurface at the pipeline ROW, Purple bed straw is in the riparian area of the stream.

**STREAM ID:** S4-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CB, PF

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 3-4 ft

**Width (ft) (bank to bank):** 3-4 ft
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muck, Veg, Wood

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2-3 ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 2-3 ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Moss, grass

**Width of riparian corridor (ft):** 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Stream that flows entirely through W1-T7 and into S1-T7

**STREAM ID:** S5-T6-HR

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** West to East

**Width (ft) (water's edge to water's edge):** 2ft - 3ft

**Width (ft) (bank to bank):** 2ft-3ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 6in
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank: 3ft

Highest Left Bank Height*: 1/2ft
Highest Left Bank Slope*: 2:1
Highest Right Bank Height*: 1/2ft
Highest Right Bank Slope*: 2:1
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Eastern hemlock, Silver birch

**Width of riparian corridor (ft):** 15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☑ leaf litter disturbed or washed away
- ☑ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Channelized along road and goes through culvert

**NOTES:**
Spring fed channel that starts along a road and flows through a culvert and down a hill. At bottom of hill stream becomes subsurface and braids into two channels that reconnect before flowing into T7-S1

**STREAM ID:** S3-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 4/25/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CB, PF

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2-3 ft

**Width (ft) (bank to bank):** 2-3 ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muck and Veg

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☑ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Moss

**Width of riparian corridor (ft):** 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Small stream that parallels W1-T7 and flows into S1-T7

**STREAM ID:** S2-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** PF/CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** West to east

**Width (ft) (water's edge to water's edge):** 4 ft.

**Width (ft) (bank to bank):** 4 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☑ Clay
- ☐ Concrete
- ☑ Other Wood and muck

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☑ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
eastern hemlock.

**Width of riparian corridor (ft):** 150'

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
intermittent tributary to Hensel Fork channel through W4-T5, no erosion.

**STREAM ID:** S1-T7-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/24/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CB, PF

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 20-30 ft.

**Width (ft) (bank to bank):** 20-30 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Eastern hemlock, river birch

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Large perennial stream with braids and many tributaries.

**STREAM ID:** S1-T6-HR

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/24/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** West to East

**Width (ft) (water's edge to water's edge):** 2'

**Width (ft) (bank to bank):** 2'-3'
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☑ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1/2ft -1&1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft - 1&1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** 6in
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:** 3ft

**Highest Left Bank Height*:** 1.5ft
**Highest Left Bank Slope*:** 3:1
**Highest Right Bank Height*:** 1.5ft
**Highest Right Bank Slope*:** 3:1
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☑ yes, width (ft): 2ft
☐ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☑ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☑ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:
☑ man-altered – Explain: Channelized along road and through culvert

**NOTES:**
Spring fed channel running along road and through a culvert pipe and into a wetland outside investigation area.

**STREAM ID:** S2-T6-HR

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☑ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/24/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to South

**Width (ft) (water's edge to water's edge):** 1'-2'

**Width (ft) (bank to bank):** 1'-2"
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☑ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:
☑ man-altered – Explain: Appears to have been dug into a channel

**NOTES:**
Spring fed channel coming out of side of road.

**STREAM ID:** S3-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft.

**Width (ft) (bank to bank):** 1-2 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Boulder

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Red maple, red oak.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Had flow when monitored.

**STREAM ID:** S4-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft.

**Width (ft) (bank to bank):** 1-2 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☑ Other N/A

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Red maple, red oak, and white pine.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
No flow, open ended.

**STREAM ID:** S5-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft.

**Width (ft) (bank to bank):** 1-2 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☑ Other N/A

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Red maple, red oak, and white pine.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Road ditch through culvert.

**NOTES:**

**STREAM ID:** S6-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 3 ft.

**Width (ft) (bank to bank):** 3 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muc, Veg

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☑ Other N/A

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
White pine, speckled alder, red maple, and river birch.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: Exposed pipe down channel

**NOTES:**
Parallels road

**STREAM ID:** S7-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 20 ft.

**Width (ft) (bank to bank):** 20 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muc, Veg

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☑ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
White pine, speckled alder, red maple, and river birch.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☑ man-altered – Explain: 2 Culverts.

**NOTES:**
Below timber bridge and influenced by beaver dam.

**STREAM ID:** S2-T7a-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 05/01//19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft.

**Width (ft) (bank to bank):** 1-2 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☑ Clay
- ☐ Concrete
- ☑ Other Wood and muck

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☑ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope: ☑ 0-30º (4:1) ☐ 31-45º (3:1) ☐ 46-60º (2:1) ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope: ☑ 0-30º (4:1) ☐ 31-45º (3:1) ☐ 46-60º (2:1) ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Alders, white pine, red maple, and eastern hemlock.

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
**If yes, list:**
Minnows, newts, and egg masses.

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☐ run ☑ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Perennial channel through W4-T5, no erosion.

**STREAM ID:** S1-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2 ft.

**Width (ft) (bank to bank):** 2 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Veg and muck

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Upper portion goes subsurface in areas.

**STREAM ID:** S2-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

| | |
|---|---|
| **County:** Clinton | **Stream Name:** ☑ UNNAMED ☐ NAMED: |
| **Date:** 04/29/19 | **Stream Type:** ☑ STREAM ☐ DITCH/CANAL |
| **Map No. :** | **Observers:** JH/DW |

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 2ft

**Width (ft) (bank to bank):** 2ft
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other_____

**BANK HEIGHT AND SLOPE**

| Left Bank* | Right Bank* |
|---|---|
| Height (ft): 1-2ft | Height (ft): 1-2ft |
| Slope: ☐ 0-30º (4:1) | Slope: ☐ 0-30º (4:1) |
| ☐ 31-45º (3:1) | ☐ 31-45º (3:1) |
| ☑ 46-60º (2:1) | ☑ 46-60º (2:1) |
| ☐ 61-90º (1:1) | ☐ 61-90º (1:1) |

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:_____

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**_____

**Highest Left Bank Height*:**_____
**Highest Left Bank Slope*:**_____
**Highest Right Bank Height*:**_____
**Highest Right Bank Slope*:**_____
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☐ yes, list ID: HB-_____
☑ no
If yes, list:

**Width of riparian corridor (ft):**_____

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

**OHWM Criteria – Ordinary High Water Mark**

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):_____

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:_____
☐ man-altered – Explain:_____

**NOTES:**
Starts at spring house

**STREAM ID:** S1-T7a-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft.

**Width (ft) (bank to bank):** 1-2 ft.
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Veg and muck

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1-2ft
Slope: ☑ 0-30º (4:1) ☐ 31-45º (3:1) ☐ 46-60º (2:1) ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope: ☑ 0-30º (4:1) ☐ 31-45º (3:1) ☐ 46-60º (2:1) ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
Speckled alder, Eastern hemlock

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Upper portion goes subsurface in areas.

**STREAM ID:** S3a-T5-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/29/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** JH/DW

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** south to north

**Width (ft) (water's edge to water's edge):** 1-2 ft.

**Width (ft) (bank to bank):** 1-2 ft.
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Boulder

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-2ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Bay leave willow, White Pine, Speckled Alder

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
starts at a man made spring house.

**STREAM ID:** S1-T2-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/24/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, CC

**CHARACTERISTICS**

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** South to North

**Width (ft) (water's edge to water's edge):** 2-3ft

**Width (ft) (bank to bank):** 3-4ft
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☑ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**
- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:
☑ man-altered – Explain: runs through a culvert and ditch

**NOTES:**
Runoff fed channel flowing through a road culvert pipe and into a wetland.

**STREAM ID:** S1-T1-HR

**STREAM DATA**

☑ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☐ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 04/24/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** South to North

**Width (ft) (water's edge to water's edge):** 2-3ft

**Width (ft) (bank to bank):** 3-4ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☐ Cobbles
- ☑ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1-3ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☐ yes, list ID: HB-
☑ no
If yes, list:

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:
☑ man-altered – Explain: runs through a culvert and ditch

**NOTES:**
Runoff fed channel flowing through a road culvert pipe and into a wetland.

**STREAM ID:** S5-T4-HR

**STREAM DATA**

☐ ROW ☐ Project Facility STATE Pennsylvania
☐ Access Road ☑ Staging/Storage Area

**County:** Clinton

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 5/30/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW,CB

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** North to south

**Width (ft) (water's edge to water's edge):** 1-2 ft

**Width (ft) (bank to bank):** 1-2 ft
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 2 ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 2 ft
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):** ~2ft
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:
Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Spruce, Apple

**Width of riparian corridor (ft):** 10-15ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☐ riffles
Explain:

**Is the stream/tributary:**
☐ natural
☑ manmade – Explain: driveway ditch
☐ man-altered – Explain:

**NOTES:**
Ditch that exists W3-T4-HR

# ATTACHMENT B

# WETLAND AND WATER RESOURCE SUMMARY TABLES

# WETLAND RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**LEIDY SOUTH PROJECT - HENSEL REPLACEMENT**
**WETLAND RESOURCE SUMMARY TABLE**

| Wetland ID | Dataform ID | Cowardin Code | Resource Size | | | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Chapter 105.17 Wetland Designation | Watershed Information | | | Wetland Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | Watershed Name | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | |
| W1-T8-HR | W1-T8-HR-1a | PEM | 111 | 38 | 2,027 | No | RPWWD | 41.388665 | -77.738239 | EV | Mudlick Run | EV, MF | - | PEM wetland abutting S2-T8-HR within an active cattle pasture. |
| W2-T8-HR | W2-T8-HR-1a | PEM | 97 | 21 | 1,644 | No | Isolate | 41.392366 | -77.742468 | Other | Mudlick Run | EV, MF | - | PEM wetland along a grass road. Tadpoles and freshwater mussels were present. |
| W10-T6-HR | W10-T6-HR-1a | PEM | 21 | 8 | 168 | No | Isolate | 41.395369 | -77.745389 | Other | Mudlick Run | EV, MF | - | A small isolated PEM wetland located on pipeline ROW. Saturation was present during the survey. |
| W9-T6-HR | W9-T6-HR-1a | PEM | 168 | 20 | 2,623 | No | Isolate | 41.395336 | -77.745641 | Other | Mudlick Run | EV, MF | - | A PEM wetland located on a pipeline ROW. This wetland abuts S11-T6-HR and is hydrologically conneced to W11-T6-HR via this channel |
| W11-T6-HR | W11-T6-HR-1a | PEM | 46 | 5 | 156 | No | Isolate | 41.395486 | -77.745442 | Other | Mudlick Run | EV, MF | - | A PEM wetland on a pipeline ROW. This wetland abuts S11-T6-HR and is hydrologically connected to W9-T6-HR via the channel |
| W12-T6-HR | W12-T6-HR-1c | PFO | 128 | 60 | 5,517 | No | Isolate | 41.397992 | -77.75289 | Other | Dark Hollow | EV, MF | - | Located in a vernal pool in the middle of the woods that appears to have fluctuating water levels. Frog and salamander egg masses and tadpoles present. |
| W13-T6-HR | W13-T6-HR-1c | PFO | 51 | 14 | 963 | No | RPWWD | 41.401187 | -77.762815 | EV | Dark Hollow | EV, MF | - | A PFO wetland that abuts S12-T6-HR adjacent to the existing pipeline ROW. |
| W4-T7a-HR | W4-T7a-HR-1c | PFO | 15 | 11 | 155 | No | Isolate | 41.405133 | -77.770641 | Other | Dark Hollow | EV, MF | - | PFO Wetland (vernal pool) located adjacent to existin grass hiking trail. Tadpoles, newts, wood frog eggs, and spotted salmander eggs were observed. |
| W3-T7a-HR | W3-T7a-HR-1c | PFO | 35 | 15 | 564 | Yes | Delineate | 41.405067 | -77.770819 | Other | Paddy Run | EV, MF | - | PFO wetland (vernal pool) located adjacent to an existing grass hiking trail. Tadpoles, newts, wood frog eggs, and sotted salamander eggs were observed. |
| W5-T7a-HR | - | PEM | 130 | 9 | 816 | Yes | Isolate | 41.432568 | -77.768282 | Other | Dark Hollow | EV, MF | - | PEM portion of a vernal pool/PFO/PEM wetland complex located on an existing access road. |
| | W5-T7a-HR-1c | PFO | 218 | 23 | 5,511 | | | 41.432879 | -77.768063 | | | | | Vernal pool/ PFO Complex. Located along an existing grass hiking trail. Saturation to the surface was present. |
| W6-T7a-HR | W6-T7a-HR-1c | PFO | 255 | 35 | 9,037 | Yes | Delineate | 41.432543 | -77.767997 | Other | Dark Hollow | EV, MF | - | Vernal pool/ PFO complex. Located adjacent to an existing grass hiking trail. Amphibian eggs present. Saturation to the surface was present. |
| W7-T7a-HR | W7-T7a-HR-1c | PFO | 23 | 11 | 209 | No | Isolate | 41.432818 | -77.767845 | Other | Dark Hollow | EV, MF | - | PFO wetland adjaent to W6-T7a-HR located adjacent to an existing grass hiking trail. Saturation to the surface was present. |
| W8-T7a-HR | W8-T7a-HR-1c | PFO | 79 | 48 | 3,178 | No | Isolate | 41.432811 | -77.767246 | Other | Dark Hollow | EV, MF | - | PFO wetland located adjacent to an existing grass hiking trail. Saturation to the surface was present. |
| W17-T7-HR | W17-T7-HR-1a | PEM | 153 | 125 | 14,422 | No | Isolate | 41.406754 | -77.77865 | EV | Paddy Run | EV, MF | - | Isolated PEM wetland located within an existing pipeline ROW. |
| W7-T6-HR | W7-T6-HR-1c | PFO | 107 | 10 | 1,291 | No | RPWWD | 41.408917 | -77.787141 | EV | Paddy Run | EV, MF | - | PFO wetland in a the floodplain of a S7-T7-HR receiving water from a spring seep. |
| W8-T6-HR | W8-T6-HR-1b | PSS | 82 | 7 | 440 | No | RPWWD | 41.409346 | -77.787446 | EV | Paddy Run | EV, MF | - | A PSS wetland located within the floodplain of S7-T7-HR. |
| W2-T7-HR | W2-T7-HR-1c | PFO | 131 | 13 | 1,784 | No | RPWWD | 41.410073 | -77.787708 | EV | Paddy Run | EV, MF | - | A PFO wetland located on the edge of the existing pipeline ROW abutting S7-T7. |
| W1-T7-HR | W1-T7-HR-1a, W1-T7-HR-2a, W1-T7-HR-3a | PEM | 117 | 20 | 4,929 | No | RPWWD | 41.41208 | -77.797567 | EV | Hensel Fork | EV, MF | - | W1-T7-1a is a complex of PEM, PSS and PFO wetlands located within spring seeps in the floodplain of stream S1-T7-HR (Hensel Fork). |
| | W1-T7-HR-1b, W1-T7-HR-2b, W1-T7-HR-3b | PSS | 60 | 10 | 564 | | | 41.412026 | -77.797449 | | | | | |
| | W1-T7-HR-1c | PFO | 285 | 31 | 19,789 | | | 41.411177 | -77.796062 | | | | | |
| W3-T6-HR | W3-T6-HR-1c | PFO | 81 | 55 | 3,144 | No | Isolate | 41.411132 | -77.791231 | Other | Hensel Fork | EV, MF | - | An isolated spring fed PFO wetlad located on a hillslope above a pipeline ROW. |
| W4-T6-HR | W4-T6-HR-1c | PFO | 170 | 40 | 5,541 | No | RPWWD | 41.410926 | -77.791729 | EV | Hensel Fork | EV, MF | - | A spring fed PFO wetlad located on a hillspole above a pipeline ROW. The wetland abuts S6-T6-HR. |
| W4-T7-HR | W4-T7-HR-1c | PFO | 79 | 16 | 1,162 | No | RPWWD | 41.410258 | -77.792 | EV | Hensel Fork | EV, MF | - | A spring fed PFO wetlad located on a hillspole above Hensel Fork and abutting S8-T7-HR. |
| W7-T5-HR | W7-T5-HR-1a | PEM | 181 | 68 | 10,781 | Yes | RPWWD | 41.412979 | -77.834377 | EV | Drury Run | EV, MF | - | A PEM, PSS and PFO wetland complex located along a gravel access roadway that abuts S6-T5-HR and S7-T5-HR (Drury Run). |
| | - | PSS | 157 | 51 | 7,102 | | | 41.412857 | -77.834886 | | | | | |
| | W7-T5-HR-1c | PFO | 145 | 35 | 4,539 | | | 41.412802 | -77.835573 | | | | | |
| W8-T5-HR | W8-T5-HR-1b | PSS | 89 | 58 | 3,335 | Yes | RPWWD | 41.41294 | -77.83508 | EV | Drury Run | EV, MF | - | A PEM and PFO wetland complex located along a gravel access roadway that abuts S7-T5-HR (Drury Run). |
| | - | PFO | 413 | 58 | 18,507 | | | 41.413071 | -77.834928 | | | | | |
| W6-T5-HR | - | PSS | 199 | 17 | 1,677 | Yes | RPWWD | 41.414503 | -77.83566 | EV | Drury Run | EV, MF | - | A PEM and PSS wetland complex so the south of Raccoon Lane that abuts S2-T7a-HR (Drury Run). |
| | W6-T5-HR-1c | PFO | 334 | 65 | 19,335 | | | 41.414631 | -77.835331 | | | | | |
| W1-T5-HR | W1-T5-HR-1c | PFO | 32 | 27 | 818 | No | Isolate | 41.415031 | -77.833799 | Other | Drury Run | EV, MF | - | An isolated PFO wetland within a depression adjacent to Raccoon Lane. |
| W2-T5-HR | W2-T5-HR-1a | PEM | 25 | 11 | 207 | No | Isolate | 41.415078 | -77.834308 | Other | Drury Run | EV, MF | - | An isolated PEM depression within a forest adjacent to Racoon Lane. |

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**LEIDY SOUTH PROJECT - HENSEL REPLACEMENT**
**WETLAND RESOURCE SUMMARY TABLE**

| Wetland ID | Dataform ID | Cowardin Code | Resource Size | | | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Chapter 105.17 Wetland Designation | Watershed Information | | | Wetland Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | Watershed Name | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | |
| W3-T5-HR | W3-T5-HR-1a | PEM | 33 | 15 | 382 | No | Isolate | 41.414994 | -77.834208 | Other | Drury Run | EV, MF | - | An isolated PEM depression within a forest adjacent to Racoon Lane. |
| W5-T5-HR | W5-T5-HR-1a | PEM | 126 | 17 | 1,446 | No | Isolate | 41.414563 | -77.836065 | Other | Drury Run | EV, MF | - | A PEM wetland located along the side of a shallow well access road adjacent to the existing ROW. |
| W5-T6-HR | W5-T6-HR-1a | PEM | 118 | 114 | 6,011 | No | Isolate | 41.41992 | -77.829781 | Other | Drury Run | EV, MF | - | Located within a small PEM wetland fed by runoff from a mountain side on a flat area on a pipeline ROW |
| W6-T6-HR | W6-T6-HR-1a | PEM | 52 | 24 | 862 | No | Isolate | 41.419833 | -77.830815 | Other | Drury Run | EV, MF | - | Located wihtin a small PEM wetland Located on an old logging road near a pipeline ROW |
| W1-T7a-HR | W1-T7a-HR-1a | PEM | 41 | 23 | 667 | No | Isolate | 41.419904 | -77.831386 | Other | Drury Run | EV, MF | - | PEM Wetland located within the existing pipeline ROW. Hensle Fork (S1-T7) flows throughout the wetland |
| W2-T7a-HR | W2-T7a-HR-1c | PEM | 35 | 8 | 221 | No | Isolate | 41.419937 | -77.831885 | Other | Drury Run | EV, MF | - | An isolated PEM and PFO wetland located on the edge of the existing pipeline ROW. |
| | | PFO | 115 | 19 | 1,597 | | | 41.419996 | -77.83195 | | | | | |
| W4-T5-HR | W4-T5-HR-1a, W4-T5-HR-2a | PEM | 3929 | 2771 | 423,149 | Yes | RPWWD | 41.415926 | -77.835105 | EV | Drury Run | EV, MF | - | Wetland W4-T5-HR is the delineated portions of the Tamarack Swamp. The Tamarack Swamp is a complex of PEM, PSS, PFO and POW wetland types. S1-T5-HR, S2-T5-HR, S3-T5-HR, S1-T7a-HR, and S2-T7a-HR (Drury Run) originates within the Tamarack swamp. |
| | W4-T5-HR-1b, W4-T5-HR-2b, W4-T5-HR-3b | PSS | | | 861,755 | | | 41.415468 | -77.835219 | | | | | |
| | W4-T5-HR-1c, W4-T5-HR-2c, W4-T5-HR-3c | PFO | | | 1,773,043 | | | 41.416145 | -77.834789 | | | | | |
| | - | POW | | | 2,129 | | | 41.42644 | -77.843355 | | | | | |
| W3-T1-HR | W3-T1-HR-1a | PEM | 484 | 230 | 38,538 | Yes | Delineate | 41.422223 | -77.847365 | EV | Drury Run | EV, MF | - | A PEM and PFO wetland located within and extending out along both sides of the existing pipeline ROW. |
| | W3-T1-HR-1c | PFO | 167 | 101 | 14,620 | | | 41.422623 | -77.847095 | | | | | |
| W2-T2-HR | W2-T2-HR-1a | PEM | 38 | 23 | 664 | No | Isolate | 41.425112 | -77.848746 | Other | Drury Run | EV, MF | - | An isolated PEM wetland adjacent to W1-T1-HR. |
| W1-T1-HR | W1-T1-HR-1a | PEM | 328 | 118 | 79,678 | Yes | NRPWWD | 41.425961 | -77.849693 | EV | Drury Run | EV, MF | - | W1-T1-HR-1 is a PEM, PSS, PFO wetland complex that flows over a gas pipeline with disturbed soils and receives water from a stormwater drainage feature (S1-T1-HR) off a pump station. |
| | - | PSS | 86 | 47 | 3,084 | | | 41.425097 | -77.848438 | | | | | |
| | - | PFO | 233 | 63 | 9,216 | | | 41.425411 | -77.849087 | | | | | |
| W1-T10-HR | W1-T10-HR-1a | PEM | 139 | 56 | 6,028 | Yes | Delineate | 41.438644 | -77.828947 | EV | Austin Hollow | EV, MF | - | W1-T10 is a PEM wetland located on at the edge of an area that was previously disturbed. |
| W3-T4-HL | W3-T4-HL-1a | PEM | 763 | 71 | 21,727 | No | NRPWWD | 41.340229 | -77.707844 | Other | West Branch Susquehanna River | WWF, MF | - | Located along SR 120 and extending into farm fields. Source oh hydrology is a drainage culvert. |

| | |
|---|---|
| **Total PEM Wetlands** | **617,146** |
| **Total PSS Wetlands** | **877,957** |
| **Total PFO Wetlands** | **1,899,520** |
| **Total POW Wetlands** | **2,129** |
| **TOTAL** | **3,396,752** |

# WATERCOURSE RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**LEIDY SOUTH PROJECT - HENSEL REPLACEMENT**
**WATERCOURSE RESOURCE SUMMARY TABLE**

| Watercourse ID | Stream Name | Type | Resource Size | | | Floodway - FEMA & 50ft (ac) | FEMA Floodplain (ac) | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Watershed Name | PA Code Chapter 93 Water Quality | | PFBC Classification | | | Watercourse Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | | | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | Stocked Trout | Naturally Reproducing Trout | Class A Wild Trout | |
| S2-T8-HR | UNT to Mudlick Run | Intermittent | 579 | 5 | 2751 | 1.36 | - | Yes | RPW | 41.388633 | -77.738184 | Mudlick Run | EV, MF | - | No | Yes | Yes | Evidence of erosion from cattle, flows across the pipeline ROW through a cattle pasture. |
| S11-T6-HR | UNT to Mudlick Run | Ephemeral | 89 | 2 | 177 | 0.39 | - | No | NRPW | 41.395406 | -77.745543 | Mudlick Run | EV, MF | - | No | Yes | Yes | No erosion, starts at wetland and flows across Pipeline ROW (loses defined bed and bank) |
| S12-T6-HR | UNT to Dark Hollow | Perennial | 516 | 20 | 8,630 | 1.35 | - | Yes | RPW | 41.401532 | -77.762646 | Dark Hollow | EV, MF | - | No | Yes | No | No erosion, at bottom of two hills and flows across a pipeline ROW |
| S9-T6-HR | UNT to Paddy Run | Perennial | 420 | 6 | 2,523 | 1.04 | - | Yes | RPW | 41.408863 | -77.785265 | Paddy Run | EV, MF | - | No | Yes | No | No erosion, presence of runs, pools and riffles. Flows down a slope crossing pipeline ROW |
| S10-T6-HR | UNT to Paddy Run | Intermittent | 48 | 2 | 95 | 0.17 | - | Yes | RPW | 41.408662 | -77.786031 | Paddy Run | EV, MF | - | No | Yes | No | No erosion, spring fed small channel coming out of hill into a wetland. |
| S7-T7-HR | Paddy Run | Perennial | 670 | 30 | 20,253 | 1.80 | 0.96 | Yes | RPW | 41.409494 | -77.787433 | Paddy Run | EV, MF | - | No | Yes | No | No erosion, drains across Pipline ROW w/small floodplain |
| S7-T6-HR | UNT to Hensel Fork | Intermittent | 57 | 4 | 138 | | - | No | RPW | 41.410889 | -77.791467 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion, Spring fed channel down hill to a Pipeline ROW, goes subsurface |
| S6-T6-HR | UNT to Hensel Fork | Intermittent | 65 | 2 | 127 | | - | No | RPW | 41.410818 | -77.791595 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion, natural spring fed channel that flows down hill into Pipeline ROW and into a wetland |
| S8-T6-HR | UNT to Hensel Fork | Intermittent | 42 | 2 | 83 | | - | No | RPW | 41.410767 | -77.791695 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion, spring fed channel downhill into a pipeline ROW, goes subsurface |
| S8-T7-HR | UNT to Hensel Fork | Intermittent | 58 | 3 | 163 | | - | No | RPW | 41.410338 | -77.791935 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion. Stream flows downhill into S1-T7-HR. |
| S9-T7-HR | UNT to Hensel Fork | Intermittent | 207 | 1.5 | 306 | | - | No | RPW | 41.4101 | -77.791974 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion. The stream parallels Hensel Fork Road, then flows under with a man-altered culvert to flow through W4-T7-HR and into S1-T7-HR. |
| S10-T7-HR | UNT to Hensel Fork | Intermittent | 75 | 1.5 | 113 | | - | No | RPW | 41.410137 | -77.792277 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion. Man altered culvert allows stream to flow underneath Hensel Fork Road. |
| S6-T7-HR | UNT to Hensel Fork | Intermittent | 67 | 3 | 226 | | - | No | RPW | 41.410389 | -77.792893 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion. Stream flows through W1-T7-HR and into S1-T7-HR. Riparian vegetation present. |
| S5-T7-HR | UNT to Hensel Fork | Intermittent | 185 | 3 | 559 | 6.53 | - | No | RPW | 41.410372 | -77.793182 | Hensel Fork | EV, MF | - | No | Yes | No | Stream flows throguh W1-T7-HR and into S1-T7-HR. Riparian vegetation present. |
| S4-T7-HR | UNT to Hensel Fork | Intermittent | 244 | 4 | 951 | | - | No | RPW | 41.410751 | -77.795088 | Hensel Fork | EV, MF | - | No | Yes | No | Stream flows entirely throguh W1-T7-HR and into S1-T7-HR. Riparian vegetation present. |
| S5-T6-HR | UNT to Hensel Fork | Intermittent | 509 | 4 | 2,010 | | - | No | RPW | 41.41094 | -77.796122 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion, Spring fed channel along road, goes subsurface, braids, reconnects, flows into S1-T7-HR |
| S3-T7-HR | UNT to Hensel Fork | Intermittent | 15 | 2 | 31 | | - | No | RPW | 41.411625 | -77.797082 | Hensel Fork | EV, MF | - | No | Yes | No | Stream flows parallel to W1-T7-HR and into S1-T7-HR. Erosion present. |
| S2-T7-HR | UNT to Hensel Fork | Intermittent | 94 | 4 | 380 | | - | No | RPW | 41.412538 | -77.798015 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion, riparian vegetation present, runs through W4-T5-HR. |
| S2a-T7-HR | UNT to Hensel Fork | Ephemeral | 14 | 4 | 59 | | - | No | NRPW | 41.412599 | -77.797876 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion, channel runs through W4-T5-HR. Aquatic organisms and Riparian vegetation present. |
| S1-T7-HR | Hensel Fork | Perennial | 2,646 | 15 | 39,331 | | 1.94 | Yes | RPW | 41.410547 | -77.791566 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion, stream braids and has multiple tributaries. Riparian vegetation present. |
| S1-T7-HR-Braids | Hensel Fork | Perennial | 601 | 2.5 | 1,546 | | - | No | RPW | 41.410463 | -77.793323 | Hensel Fork | EV, MF | - | No | Yes | No | No erosion. Upper portion goes subsurface in areas. |
| S1-T8-HR | UNT to Hensel Fork | Ephemeral | 86 | 5 | 472 | 0.35 | - | No | RPW | 41.411184 | -77.793213 | Hensel Fork | EV, MF | - | No | Yes | No | Channel originating from a spring and flows down a slope and goes subsurface at the pipeline ROW. |
| S1-T6-HR | UNT to Sandy Run | Ephemeral | 344 | 3 | 1,044 | 0.34 | - | Yes | NRPW | 41.408182 | -77.802058 | Sandy Run | HQ-CWF, MF | - | No | Yes | No | No erosion. Man altered - spring fed channel running along road, flows into a culvert pipe and into a wetland outside invesitgation area. |
| S2-T6-HR | UNT to Sandy Run | Intermittent | 57 | 2 | 114 | | - | Yes | RPW | 41.408197 | -77.801441 | Sandy Run | HQ-CWF, MF | - | No | Yes | No | No erosion, man-altered: spring fed channel coming from side of road |
| S3-T5-HR | UNT to Drury Run | Ephemeral | 91 | 2 | 181 | 0.31 | - | Yes | NRPW | 41.421201 | -77.832906 | Drury Run | EV, MF | - | No | Yes | No | Channel dissipates within pipeline ROW. No erosion. |
| S4-T5-HR | UNT to Drury Run | Ephemeral | 113 | 2 | 221 | 0.46 | - | Yes | NRPW | 41.413968 | -77.830067 | Drury Run | EV, MF | - | No | Yes | No | Stream did not have water present during the survey. Riparian vegetation was present. |
| S5-T5-HR | UNT to Drury Run | Ephemeral | 62 | 2 | 125 | | - | Yes | NRPW | 41.413797 | -77.830152 | Drury Run | EV, MF | - | No | Yes | No | Man altered road ditch through culvert. Riparian vegetation present. |
| S6-T5-HR | UNT to Drury Run | Perennial | 535 | 3 | 1,566 | 0.09 | - | Yes | RPW | 41.41308 | -77.834989 | Drury Run | EV, MF | - | No | Yes | No | Man altered exposed pipe runs down channel. Stream parallels road. Riparian vegetation present. |
| S7-T5-HR | Drury Run | Perennial | 132 | 39 | 2,889 | 0.21 | 0.79 | Yes | RPW | 41.412868 | -77.835124 | Drury Run | EV, MF | - | No | Yes | No | No erosion. Two man altered culverts present in the area. Located below timber bridge and influenced by beaver dam. |
| S2-T7a-HR | Drury Run | Perennial | 914 | 40 | 31,194 | 2.66 | 55.13 | Yes | RPW | 41.415648 | -77.835911 | Drury Run | EV, MF | - | No | Yes | No | No erosion. Upper portion goes subsurface in areas. |
| S1-T5-HR | UNT to Drury Run | Intermittent | 118 | 2 | 235 | 0.46 | - | No | RPW | 41.415914 | -77.834061 | Drury Run | EV, MF | - | No | Yes | No | No erosion, upper portion goes subsurface in areas. |
| S2-T5-HR | UNT to Drury Run | Intermittent | 653 | 2 | 1,306 | 1.52 | 0.05 | Yes | RPW | 41.418599 | -77.833807 | Drury Run | EV, MF | - | No | Yes | No | No erosion, flow begins at a spring house. |
| S1-T7a-HR | UNT to Drury Run | Intermittent | 959 | 2 | 1,917 | 1.88 | - | Yes | RPW | 41.420761 | -77.832087 | Drury Run | EV, MF | - | No | Yes | No | Originates at a spring within W4-T5-HR. No erosion. |
| S3a-T5-HR | UNT to Drury Run | Perennial | 177 | 2 | 354 | 0.40 | - | Yes | RPW | 41.421187 | -77.832936 | Drury Run | EV, MF | - | No | Yes | No | Originates at a man made spring house within W4-T5-HR. No erosion. |
| S1-T2-HR | UNT to Drury Run | Ephemeral | 238 | 4 | 953 | 0.64 | - | No | NRPW | 41.420681 | -77.84222 | Drury Run | EV, MF | - | No | Yes | No | No erosion. Man altered through a road culvert pipe and into a wetland. |
| S1-T1-HR | UNT to Drury Run | Ephemeral | 342 | 4 | 1,369 | 1.12 | - | No | NRPW | 41.426678 | -77.849927 | Drury Run | EV, MF | - | No | Yes | No | A stormwater channel that dissipates within W1-T1-HR. No erosion present. |
| S5-T4-HR | UNT to West Branch Susquehanna River | Ephemeral | 180 | 2 | 361 | 0.61 | - | Yes | NRPW | 41.341219 | -77.70591 | West Branch Susquehanna River | WWF, MF | - | No | No | No | Channel originates at wetland W3-T4-HR. No erosion present. |
| | | | | **Total Ephemeral Channels** | **4,962** | | | | | | | | | | | | | |
| | | | | **Total Intermittent Channels** | **11,505** | | | | | | | | | | | | | |
| | | | | **Total Perennial Channels** | **108,286** | | | | | | | | | | | | | |
| | | | | **TOTAL** | **124,753** | | | | | | | | | | | | | |

ATTACHMENT C

PENNSYLVANIA LEVEL 2 RAPID ASSESSMENT REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

ATTACHMENT C

HENSEL LOOP REPLACEMENT LEVEL 2 RAPID ASSESSMENT REPORT

CHAPMAN AND LEIDY TOWNSHIPS, CLINTON COUNTY, PENNSYLVANIA

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LEIDY SOUTH PROJECT

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HENSEL LOOP REPLACEMENT LEVEL 2 RAPID ASSESSMENT REPORT

CHAPMAN AND LEIDY TOWNSHIPS, CLINTON COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Williams) to conduct a Functional Assessment of wetland and water resources associated with the Leidy South Project – Hensel Replacement (Project) located in Chapman and Leidy Townships, Clinton County, Pennsylvania, on the Tamarack and Young Womans Creek, Pennsylvania, USGS 7.5 Minute Quadrangles. The purpose of the Functional Assessment was to evaluate the condition of onsite aquatic resources that will be impacted as a result of the Project in order to meet the requirements as outlined in 25 Pa. Code Chapter 105 regulations. This report provides information on the methodology, data collected, field findings, and conclusions pertaining to the condition of wetland and water resources to be impacted. The Functional Assessment was conducted by WHM from April 2019 through August 2019.

# 2.0 METHODOLOGY

The Functional Assessment was conducted in accordance with the procedures and technical guidelines outlined in the Pennsylvania Department of Environmental Protection's (PADEP) Level 2 Rapid Assessment Protocols. A desktop analysis was conducted to determine assessment areas (AA) and zones of influence (ZOI). Field data was collected, and the desktop and field data were used in conjunction to arrive at the overall condition scores. The observations made represent the assessor's best professional judgement exercised with the guidance of the Rapid Assessment Protocols.

## 2.1 WETLAND CONDITION ASSESSMENT

The Functional Assessment of the onsite wetlands was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol* (Wetland Protocol). Aerial and satellite imagery combined with ArcGIS were utilized to determine the AA. The AA was determined based on the following criteria as outlined in the Wetland Protocol:

1. The AA is comprised of the entire wetland if the wetland is less than or equal to 1.0 acre in size.
2. If the wetland is larger than 1.0 acre in size and the impact area is less than 1.0 acre, the AA will be established around the impact area until the AA is 1.0 acre in size. In general, the AA will be a representative sampling of the entire wetland while still encompassing the impact area.
3. The AA is comprised of the entire wetland impact area if the proposed impact is greater than 1.0 acre in size.

Once the AA has been established, the wetland Zone of Influence (ZOI) is determined and is comprised of the land extending 300 ft. beyond the perimeter of the AA. The AA or ZOI is then assessed using the six condition indices outlined in Table 1. As noted in the table, two sub-indices are utilized to evaluate Vegetation Condition and Water Quality Stressors.

| Index | Assessment Method | Zone Assessed |
|---|---|---|
| Wetland ZOI Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Roadbed Presence Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Vegetation Condition | | |
| *Invasive Species Presence Sub-Index* | Field Observation | AA |
| *Vegetation Stressor Presence Sub-Index* | Field Observation | AA |
| Hydrologic Modification Stressor | Field Observation | AA |
| Sediment Stressor | Field Observation | AA |
| Water Quality Stressor | | |
| *Eutrophication Stressor Presence Sub-Index* | Field Observation | AA |
| *Contaminant/Toxicity Stressor Presence Sub-Index* | Field Observation | AA |

Table 1. Wetland Condition Indices.

According to the Wetland Protocol, the Wetland Condition Index Form (WCIF) and three supplemental worksheets (Roadbed Worksheet, Invasive Presence Worksheet, and Stressor Worksheet) are used to calculate the Overall Condition Index for the wetland being assessed. Using the WCIF, each of the six indices discussed in Table 1 are scored on a scale of 1 to 20, with 20 being the optimal condition. The Overall Condition Index is calculated by summing the six main indices and then dividing by 6. In general, the closer a score is to one, the better the condition the wetland is.

## 2.2 RIVERINE CONDITION ASSESSMENT

The Functional Assessment of onsite perennial and intermittent streams was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol* (Riverine Protocol). Aerial and satellite imagery combined with ArcGIS were utilized to determine the upper and lower boundaries of the AA. The boundaries of the AA were determined based on all or some of the following criteria as outlined in the Riverine Protocol:

1. The upstream influence of backwater projected as part of the hydrologic and hydraulic (H&H) analysis and application of the same distance downstream; or
2. 20 times the channel width at bankfull stage upstream and downstream; or
3. 100 feet upstream and downstream of the proposed location, whichever is greater.

Once the upper and lower boundaries of the AA were established, the Riparian Vegetation and Riparian ZOI were established. The Riparian Vegetation Areas was

established using the following criteria as outlined in the Riverine Protocol. The following criteria are listed in order of the method that is preferred by PADEP:

1. Hydrologic modeling analysis to determine the 100-year storm event; or
2. 100-year Federal Emergency Management Agency (FEMA) floodplain mapping; or
3. In FEMA unmapped areas, the flood prone area width is estimated by determining the elevation that corresponds to twice the maximum depth of the bankfull channel as taken from the established bankfull stage; or
4. In FEMA unmapped areas where hydrologic modeling analysis and stream cross-section data is not available, estimate the flood prone area width by extending 100 feet from the stream bank towards the valley margins. Best professional judgement is to be utilized by the assessor if one or more of the valley margins are less than 100 feet from the bank and adjust boundaries.

In areas where a mapped FEMA floodplain was available, ArcGIS was used to determine the boundary. In all instances, best professional judgement was used to define the Riparian Vegetation areas in accordance with the criteria provided above.

Once the Riparian Vegetation Areas were established, Riparian ZOI boundaries were determined by extending 100 feet landward from the Riparian Vegetation Area boundaries on each side of the stream and along the entire length of the Riparian Vegetation Area. If assessing the uppermost headwaters of a watercourse, the area 100 feet above the watercourse may be included in the Riparian Zone boundary.

In accordance with the Riverine Protocol, the Riparian ZOI is not evaluated as part of the condition assessment for perennial streams with a drainage area greater than 100 square miles or less than 2,000 square miles. Likewise, the Instream Habitat condition will not be evaluated for intermittent streams. Neither of the aforementioned indices will be included in the assessment when evaluating those stream types unless deemed necessary by PADEP.

Once the AA and ZOI have been determined, the riverine condition is assessed using the five condition indices outlined in Table 2. As noted in the table, not all indices are used to determine the overall condition of the channel being evaluated, unless deemed necessary by PADEP.

| Index | Watercourse Classification | | | Assessment Method | Zone Assessed |
|---|---|---|---|---|---|
| | **Intermittent** | **Perennial** (Drainage area ≤ 100 sq. miles) | **Perennial** (Drainage area >100 sq. miles but ≤ 2,000 sq. miles ) | | |
| Channel/Floodplain Condition | Yes | Yes | Yes | Field Observations | AA |
| Riparian Vegetation Condition | Yes | Yes | Yes | Desktop Analysis of Aerial Imagery<br>Field Observations | AA<br>Riparian Vegetation Area |
| Riparian Zone of Influence Condition | Yes | Yes | No | Desktop Analysis of Aerial Imagery<br>Field Observations | Riparian ZOI |
| Instream Habitat Condition | No | Yes | Yes | Field Observations | AA |
| Channel Alteration Condition | Yes | Yes | Yes | Field Observations | AA |

Table 2. Indices to be determined based on watercourse classification.

According to the Riverine Protocol, the Riverine Assessment Form 1 (RAF1) is to be used to calculate the Riverine Condition Index for the stream being assessed. Using RAF1, each of the six indices discussed in Table 2 are scored on a scale of 1 to 20, with 20 being the optimal condition. When calculating the the Riparian Vegetation Condition Index and the Riparian ZOI Condition Index, the left and right sides are scored, summed together, and then divided by 2 for the overall score for each.

The indices evaluated in Table 2 are weighted equally when calculating the final score for the Riverine Condition Index (RCI). Therefore, to calculate RCI, each index score is added together and then divided by the number of indices evaluated. For example, when calculating RCI for an intermittent stream, the scores for the four indices assessed would be added together and divided by 4. In general, the closer the score is to 1, the better the condition of the stream being assessed.

## 3.0 RESULTS

Twelve wetlands and seven streams were evaluated during the assessment. Attachment A- Assessment Forms includes data collected for the wetlands and watercourses at the site. Attachment B - Figures includes mapping of the resources evaluated during the assessment and their respective AA and ZOI boundaries. The following provides a descriptive summary of the data collected during the Functional Assessment.

### 3.1 WETLANDS

Overall twelve (12) wetlands were assessed for the purposes of the Functional Assessment. Due to proximity, wetlands were combined as applicable, which resulted in a total of ten (10) assessment areas. In general, the wetland ZOIs were comprised of forests, the existing pipeline right-of-way, agricultural fields, and other stream and wetland features.

| Leidy South - Hensel Loop Replacement Project - Wetland Condition Assessment Summary Table | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Assessment Area Number | Wetland ID | Assessment Area (Acres) | ZOI Condition Index | Roadbed Presence Index | Vegetation Condition Index | Hydrologic Modification Index | Sediment Stressor Index | Water Quality Stressor Index | Overall Condition Index |
| 1 | W17-T7-HR | 0.33 | 0.73 | 1.00 | 0.85 | 0.90 | 1.00 | 1.00 | 0.91 |
| 2 | W8-T6-HR | 0.01 | 0.73 | 1.00 | 0.93 | 1.00 | 1.00 | 1.00 | 0.94 |
| 3 | W1-T7-HR | 0.09 | 0.78 | 0.85 | 0.95 | 1.00 | 0.85 | 1.00 | 0.90 |
| 4 | W1-T7-HR | 0.08 | 0.84 | 0.85 | 0.55 | 0.70 | 0.95 | 1.00 | 0.81 |
| 5 | W4-T5-HR | 1.00 | 0.87 | 0.95 | 0.63 | 0.90 | 1.00 | 1.00 | 0.89 |
| 6 | W4-T5-HR | 1.00 | 0.80 | 0.70 | 0.83 | 0.90 | 1.00 | 1.00 | 0.87 |
| 7 | W3-T1-HR | 0.88 | 0.65 | 0.90 | 0.70 | 0.90 | 1.00 | 1.00 | 0.86 |
| 8 | W1-T1-HR | 1.00 | 0.44 | 0.97 | 0.88 | 0.85 | 0.75 | 1.00 | 0.81 |
| 9 | W5-T7A-HR & W6-T7A-HR | 0.35 | 0.96 | 0.85 | 0.58 | 1.00 | 0.95 | 1.00 | 0.89 |
| 10 | W3-T7A-HR & W4-T7A-HR | 0.02 | 0.89 | 0.85 | 0.88 | 1.00 | 0.95 | 1.00 | 0.93 |

Table 3 – Wetland Condition Assessment Summary Table

Functional assessments resulted in Overall Condition Index scores ranged from 0.81 to 0.94 for the ten wetland functional assessments. See Attachment A (Assessment Forms) and Attachment B (Figures) for more detail.

## 3.2 STREAMS

Overall seven (7) stream were assessed for the purposes of the Functional Assessment. In general, the Riparian Vegetation and Riparian ZOIs were comprised of forests, the existing pipeline right-of-way, agricultural fields, and other stream and wetland features.

| Leidy South - Hensel Loop Replacement Project - Riparian Condition Assessment Summary Table | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Assessment Area Number | Stream ID | Assessment Area Length (Feet) | Channel / Floodplain Condition Index | Riparian Vegetation Condition Index | Riparian ZOI Condition Index | Instream Habitat Condition Index | Channel Aleration Condition Index | Overall Condition Index |
| 11 | S2-T7A-HR | 293 | 0.90 | 0.84 | 0.85 | 0.85 | 0.90 | 0.87 |
| 12 | S1-T7-HR | 698 | 0.80 | 0.83 | 0.74 | 0.75 | 0.70 | 0.76 |
| 13 | S7-T7-HR | 304 | 0.90 | 0.70 | 0.82 | 0.90 | 0.70 | 0.80 |
| 14 | S9-T6-HR | 287 | 0.80 | 0.67 | 0.82 | 0.80 | 0.75 | 0.77 |
| 15 | S1-T1-HR | 191 | 0.65 | 0.79 | 0.63 | N/A | 0.65 | 0.68 |
| 16 | S12-T6-HR | 191 | 0.90 | 0.69 | 0.72 | 0.90 | 0.75 | 0.79 |
| 17 | S1-T5-HR | 118 | 0.80 | 0.49 | 0.60 | N/A | 0.45 | 0.58 |

Table 4 – Riparian Condition Assessment Summary Table

Functional assessment scores for the seven streams ranged from 0.58 to 0.87 for the seven functional assessments. See Attachment A (Assessment Forms) and Attachment B (Figures) for more detail.

## 4.0 CONCLUSIONS

Twelve (12) wetlands and seven (7) streams were evaluated during the Functional Assessment. Because some of the wetlands and streams were located within the same area and possessed similar characteristics and habitat, they were grouped together as one during the evaluation. The Overall Condition Index for the ten (10) wetland assessments ranged from 0.81 to 0.94, indicating that wetlands for the project were of high quality. The Riverine Condition Index for the streams ranged from 0.58 to 0.87, indicating the streams were of moderate to high quality.

## 5.0 REFERENCES


1. Pennsylvania Code. 2017. http://www.pacode.com/secure/data/025/025toc.html.

2. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-003.

3. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-002.

4. United States Geological Survey (USGS). Topographic Quadrangle 7.5 minute Series Quadrangles, Tamarack and Young Womans Creek, PA.

# ATTACHMENT A

# ASSESSMENT FORMS

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.22 | 1 | 0.33 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.4067 | -77.7786 | Assessment Area 1 consists of Wetland W17-T7-HR. |

**General Comments: W17-T7-HR is a small, isolated PEM wetland located in the middle of an existing and maintained pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 41% | 34% | 25% | | | | Total Score: | CI |
| | Score: | 19 | 18 | 3 | | | | | |
| | Total Sub-score: | 7.79 | 6.12 | 0.75 | 0.00 | 0.00 | 0.00 | 14.66 | 0.73 |

**Comments: Primary land uses included an isolated, PEM wetland, an existing pipeline right-of-way, and forest land.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores | |
|---|---|---|---|---|
| a. Roadbed 0-100: | 20 | * (0.67) | 13 | |
| b. Roadbed 100-300: | 20 | * (0.33) | 7 | |
| | | Total Score: | 20 | 1.00 |

**Comments:**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| a. Invasive Species Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| b. Vegetation Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** |
| **b. Vegetation Sub-Score:** | 14 | **34** |

**CI = Total Score/40** 0.85

**4. Hydrologic Modification Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Hydrologic Modification Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | 0.90 |

**Comments:**

| | |
|---|---|
| **Score:** | **18** |

**5. Sediment Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Sediment Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | 1.00 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**6. Water Quality Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| a. Eutro-phication Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| b. Contaminant / Toxicity Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**CI = Total Score/40** 1.00

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.91** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| W17-T7-HR | 1 | 41.4067 | -77.7786 | There are no roads within the ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 0 | | | 100-300 ft. | 0 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | | | X |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | x |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | X | | |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | X | | |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

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**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.01 | 2 | 0.01 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.4094 | -77.7875 | Assessment Area 2 consists of Wetland W8-T6-HR. |

**Wetland W8-T6-HR is a small, PSS wetland that abuts S7-T7-HR.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 17% | 58% | 25% | | | | | |
| | Score: | 20 | 18 | 3 | | | | | |
| | Total Sub-score: | 3.40 | 10.44 | 0.75 | 0.00 | 0.00 | 0.00 | **14.59** | **0.73** |

**CI = Total Score/20**

**Comments: Primary land uses included a small PSS wetland, stream channel, forest, and existing maintained pipeline right-of-way.**

**2. Roadbed Presence Index**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 20 | * (0.67) | 13 |
| **b. Roadbed 100-300:** | 20 | * (0.33) | 7 |
| | | **Total Score:** | **20** |

**CI = Total Score/20**: **1.00**

**Comments:**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** | |
| **b. Vegetation Sub-Score:** | 17 | **37** | **0.93** |

**CI = Total Score/40**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | |
| **b. Contaminant Score** | 20 | **40** | **1.00** |

**CI = Total Score/40**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.94** |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.06 | 3 | 0.09 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.4105 | -77.7913 | Assessment Area 3 consists of wetland W1-T7-HR. |

**Assessment Area #3 consists of wetlands W1-T7-HR.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 14% | 67% | 16% | 3% | | | **Total Score:** | **CI** |
| | Score: | 20 | 18 | 4 | 2 | | | | |
| | Total Sub-score: | 2.80 | 12.06 | 0.64 | 0.06 | 0.00 | 0.00 | **15.56** | **0.78** |

**Comments: Primary land uses include wetlands, streams, forest, existing maintained pipeline right-of-way and a road.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 |
| **b. Roadbed 100-300:** | 17 | * (0.33) | 6 |
| | | **Total Score:** | **17** |
| | | | **0.85** |

**Comments: Hensel Fork Road is an existing, maintained gravel road that intersects through the Wetland ZOI for AA #3.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** | **CI = Total Score/40** |
| **b. Vegetation Sub-Score:** | 18 | **38** | **0.95** |

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **20** | **CI = Total Score/20** |
| | | **1.00** |

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **17** | **CI = Total Score/20** |
| | | **0.85** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutrophication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **CI = Total Score/40** |
| **b. Contaminant Score** | 20 | **40** | **1.00** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.90** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| | 3 | 41.4105 | -77.7913 | Hensel Fork Road is located in the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | 1 | 1 | 1 | 100-300 ft. | 1 | 1 | 1 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 1 | | | 100-300 ft. | 1 | | |

**Road Comments: Hensel Fork Road is an existing, maintained gravel road that intersects through the Wetland ZOI for AA #3.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | | | X |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **1** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | X | | |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **1** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 0 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

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| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.03 | 4 | 0.08 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.4120 | -77.7975 | |

**Assessment Area #4 consists of PEM and PFO portions of Wetland W1-T7-HR which abuts S1-T7-HR.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 20% | 36% | 30% | 11% | 3% | | **Total Score:** | **CI** |
| | Score: | 20 | 19 | 18 | 4 | 2 | | | |
| | Total Sub-score: | 4.00 | 6.84 | 5.40 | 0.44 | 0.06 | 0.00 | **16.74** | **0.84** |

**Comments: Primary land uses include wetlands, streams, forest, existing maintained pipeline right-of-way and a road.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 |
| **b. Roadbed 100-300:** | 17 | * (0.33) | 6 |
| | | **Total Score:** | **17** |
| | | | **0.85** |

**Comments: Hensel Fork Road is an existing, maintained gravel road that intersects through the Wetland ZOI for AA #4.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/40**

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 10 | **Total Score** |
| **b. Vegetation Sub-Score:** | 12 | **22** |

**0.55**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/20**

**Comments:**

| | |
|---|---|
| **Score:** | **14** |

**0.70**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/20**

**Comments:**

| | |
|---|---|
| **Score:** | **19** |

**0.95**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/40**

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**1.00**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.81** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| W1-T7-HR | 4 | 41.4120 | -77.7975 | Hensel Fork Rd intersects the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | 1 | 1 | 1 | 100-300 ft. | 1 | 1 | 1 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 1 | | | 100-300 ft. | 1 | | |

**Road Comments: Hensel Fork Road is an existing, maintained gravel road that intersects through the Wetland ZOI for AA #4.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | X | | |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **3** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | X | | |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | X | | |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| mivi | | | 20 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 20 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.11 | 5 | 1.0 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.418827 | -77.833305 | |

**Assessment area 5 consists of W4-T5-HR, surround forest, existing pipeline ROW, and an existing access road.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | | CI = Total Score/20 |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 40% | 46% | 6% | 4% | 4% | | | |
| | Score: | 20 | 18 | 13 | 8 | 2 | | | |
| | Total Sub-score: | 8.00 | 8.28 | 0.78 | 0.32 | 0.08 | 0.00 | **17.46** | **0.87** |

**Comments: Primary land uses include wetlands, streams, forest, existing maintained pipeline right-of-way and a road.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | | Marginal | | | | Poor | | | | | | | | | | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary | **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. | **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | | | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. | **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | | | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. | **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | | | | | | | | |
| **SCORE** | 20 19 18 17 16 | | 15 14 13 12 11 | | | | 10 9 8 7 6 | | | | 5 4 3 2 1 | | | | | | | | | | |

**Comments:**

| | Condition Categories | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | | Marginal | | | | Poor | | | | | | | | | | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary | **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. | **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | | | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. | **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | | | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. | **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | | | | | | | | |
| **SCORE** | 20 19 18 17 16 | | 15 14 13 12 11 | | | | 10 9 8 7 6 | | | | 5 4 3 2 1 | | | | | | | | | | |

| | Condition Score | Weighting | Sub-Scores | CI = Total Score/20 |
|---|---|---|---|---|
| **a. Roadbed 0-100:** | 20 | *** (0.67)** | 13 | |
| **b. Roadbed 100-300:** | 17 | *** (0.33)** | 6 | |
| | | **Total Score:** | **19** | **0.95** |

**Comments:**

**3. Vegetation Condition Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | Suboptimal | | | | Marginal | | | | Poor | | | | | | | | | | |
| a. Invasive Species Presence | **High Optimal:** No invasives present. | **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. | **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | | | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. | **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | | | > 50% of the total AA contains invasive species. | | | | | | | | | | |
| **SCORE** | 20 19 18 17 16 | | 15 14 13 12 11 | | | | 10 9 8 7 6 | | | | 5 4 3 2 1 | | | | | | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**Comments:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| b. Vegetation Stressor Presence | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | CI = Total Score/40 |
| | **High Optimal:** No vegetation stressors present within the AA boundary. | | **Low Optimal:** One vegetation stressor present within the AA boundary. | | | **High Suboptimal:** Two vegetation stressors present within the AA boundary. | | **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | | | **High Marginal:** Four vegetation stressors present within the AA boundary. | | **Low Marginal:** Five vegetation stressors present within the AA boundary. | | | Greater than five vegetation stressors present within the AA boundary. | | | | | |
| **SCORE** | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** | |
| **b. Vegetation Sub-Score:** | 5 | **25** | **0.63** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hydrologic Modification Stressor Presence | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | CI = Total Score/20 |
| | **High Optimal:** No hydrologic stressors present within the AA boundary. | | **Low Optimal:** One hydrologic stressor present within the AA boundary. | | | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. | | **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | | | **High Marginal:** Four hydrologic stressors present within the AA boundary. | | **Low Marginal:** Five hydrologic stressors present within the AA boundary. | | | Greater than five hydrologic stressors present within the AA boundary. | | | | | |
| **SCORE** | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **18** | **0.90** |

**5. Sediment Stressor Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sediment Stressor Presence | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | CI = Total Score/20 |
| | **High Optimal:** No sediment stressors present within the AA boundary. | | **Low Optimal:** One sediment stressor present within the AA boundary. | | | **High Suboptimal:** Two sediment stressors present within the AA boundary. | | **Low Suboptimal:** Three sediment stressors present within the AA boundary. | | | **High Marginal:** Four sediment stressors present within the AA boundary. | | **Low Marginal:** Five sediment stressors present within the AA boundary. | | | Greater than five sediment stressors present within the AA boundary. | | | | | |
| **SCORE** | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **20** | **1.00** |

**6. Water Quality Stressor Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a. Eutro-phication Stressor Presence | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| | No eutrophication stressors present within the AA boundary. | | | | | One eutrophication stressors present within the AA boundary. | | | | | Two eutrophication stressors present within the AA boundary. | | | | | Three eutrophication stressors present within the AA boundary. | | | | | |
| **SCORE** | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| b. Contaminant / Toxicity Stressor Presence | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | CI = Total Score/40 |
| | No contaminant / toxicity stressors present within the AA boundary. | | | | | One contaminant / toxicitystressors present within the AA boundary. | | | | | Two contaminant / toxicity stressors present within the AA boundary. | | | | | Three contaminant / toxicity stressors present within the AA boundary. | | | | | |
| **SCORE** | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **1.00** |
| **b. Contaminant Score** | 20 | **40** | |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.89** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| W1-T7-HR | 4 | 41.4120 | -77.7975 | Hensel Fork Rd intersects the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 0 | | | 100-300 ft. | 2 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | | | X |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 2 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | X | | |
| ***Dead or dying trees (trunks still standing)*** * | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| mivi | | | | 60 | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 60 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.73 | 6 | 1.0 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.4157 | -77.8352 | |

**W4-T5-HR is a large PEM/PSS/PFO wetland complex that sprawls across an existing maintained pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 55% | 12% | 20% | 9% | 4% | | **Total Score:** | **CI** |
| | Score: | 20 | 19 | 10 | 6 | 2 | | | |
| | Total Sub-score: | 11.00 | 2.28 | 2.00 | 0.54 | 0.08 | 0.00 | **15.90** | **0.80** |

**Comments: Primary land uses include wetlands, streams, forest land, existing maintained pipeline right-of-way, and roads/impervious surfaces.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 14 | * (0.67) | 9 |
| **b. Roadbed 100-300:** | 14 | * (0.33) | 5 |
| | | **Total Score:** | **14** |
| | | | **0.70** |

**Comments: Raccoon Lane, an existing dirt access road, and a gravel impervious area exist within the Wetland ZOI.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/40**

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** |
| **b. Vegetation Sub-Score:** | 13 | **33** |

**0.83**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/20**

**Comments:**

| | |
|---|---|
| **Score:** | **18** |

**0.90**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/20**

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**1.00**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/40**

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**1.00**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.87** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| W4-T5-HR | 6 | 41.4157 | -77.8352 | Hensel Fork Rd intersects the Wetland ZOI. |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | 1 | 1 | 1 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 1 | 1 | 1 | 100-300 ft. | 1 | 1 | 1 |
| Total Scores: | 0-100 ft. | 3 | | | 100-300 ft. | 4 | | |

**Road Comments: Raccoon Lane, an existing dirt access road, and a gravel impervious area exist within the Wetland ZOI. Other roadbeds includes an existing gravel pad.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 2 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **3** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | X | | |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 0 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.48 | 7 | 0.88 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.4225 | -77.8472 | |

**Assessment Area 7 is comprised of Wetland W3-T1-HR PEM & PFO. The wetland crosses an existing, maintained pipeline right-of-way.**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Wetland Zone of Influence (300 foot area around AA perimeter) | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | CI = Total Score/20 |
| | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. **Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. **Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. **Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 26% | 33% | 6% | 29% | 6% | | | |
| | Score: | 19 | 18 | 15 | 4 | 2 | | | |
| | Total Sub-score: | 4.94 | 5.94 | 0.90 | 1.16 | 0.12 | 0.00 | **13.06** | **0.65** |

**Comments: Primary land uses include wetlands, forest land, maintained utility right-of-ways, manicured lawns and impervious surfaces.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| | **High Optimal:** No roadbeds present within 100 feet of the AA boundary **Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | CI = Total Score/20 |
| | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary **Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4. **Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8. **Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12. **Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores | |
|---|---|---|---|---|
| **a. Roadbed 0-100:** | 20 | * (0.67) | 13 | |
| **b. Roadbed 100-300:** | 14 | * (0.33) | 5 | |
| | | **Total Score:** | **18** | **0.90** |

**Comments: Route 144 (Tamarack Road), Red Mill Trail, and three driveways all exist within the Wetland ZOI.**

**3. Vegetation Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| a. Invasive Species Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Comments:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. | | | **Low Optimal:** One vegetation stressor present within the AA boundary. | | **High Suboptimal:** Two vegetation stressors present within the AA boundary. | | | **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | | **High Marginal:** Four vegetation stressors present within the AA boundary. | | | **Low Marginal:** Five vegetation stressors present within the AA boundary. | | Greater than five vegetation stressors present within the AA boundary. | | | | | CI = Total Score/40 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 13 | **Total Score** |
| **b. Vegetation Sub-Score:** | 15 | **28** |
| | | **0.70** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. | | | **Low Optimal:** One hydrologic stressor present within the AA boundary. | | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. | | | **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | | **High Marginal:** Four hydrologic stressors present within the AA boundary. | | | **Low Marginal:** Five hydrologic stressors present within the AA boundary. | | Greater than five hydrologic stressors present within the AA boundary. | | | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | |
|---|---|
| **Score:** | **18** |
| | **0.90** |

**5. Sediment Stressor Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. | | | **Low Optimal:** One sediment stressor present within the AA boundary. | | **High Suboptimal:** Two sediment stressors present within the AA boundary. | | | **Low Suboptimal:** Three sediment stressors present within the AA boundary. | | **High Marginal:** Four sediment stressors present within the AA boundary. | | | **Low Marginal:** Five sediment stressors present within the AA boundary. | | Greater than five sediment stressors present within the AA boundary. | | | | | CI = Total Score/20 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |
| | **1.00** |

**6. Water Quality Stressor Index**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | | | | | One eutrophication stressors present within the AA boundary. | | | | | Two eutrophication stressors present within the AA boundary. | | | | | Three eutrophication stressors present within the AA boundary. | | | | | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | | | | | One contaminant / toxicitystressors present within the AA boundary. | | | | | Two contaminant / toxicity stressors present within the AA boundary. | | | | | Three contaminant / toxicity stressors present within the AA boundary. | | | | | CI = Total Score/40 |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |
| | | **1.00** |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.86** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| W4-T2-HR & W3-T1-HR | 7 | 41.4225 | -77.8472 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | 1 | 2 | 2 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | 0 | 100-300 ft. | 2 | 1, 2 or 4 | 2 |
| Total Scores: | 0-100 ft. | 0 | | | 100-300 ft. | 4 | | |

**Road Comments: Route 144 (Tamarack Road), Red Mill Trail, and three driveways all exist within the Wetland ZOI.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | X | | |
| ***Dead or dying trees (trunks still standing)*** * | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| mivi | | 10% | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 10 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/23/2019 | 0.38 | 8 | 1.00 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| David Wood, Paul Fisher, Carissa Butler | 41.4260 | -77.8498 | |

**Assessment Area 8 consists of wetlands W1-T1-HR (PEM,PSS,PFO wetland complex).**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 31% | 6% | 44% | 19% | | | **Total Score:** | **CI** |
| | Score: | 19 | 7 | 5 | 2 | | | | |
| | Total Sub-score: | 5.89 | 0.42 | 2.20 | 0.38 | 0.00 | 0.00 | **8.89** | **0.44** |

**Comments: Primary land uses include wetlands, forest land, maintained utility right-of-ways, manicured lawns and impervious surfaces.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 20 | * (0.67) | 13 |
| **b. Roadbed 100-300:** | 18 | * (0.33) | 6 |
| | | **Total Score:** | **19** |
| | | | **0.97** |

**Comments: One dirt/grass access road and one drainage impound exist in the Wetland ZOI.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/40**

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** |
| **b. Vegetation Sub-Score:** | 15 | **35** |

**0.88**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/20**

**Comments:**

| | |
|---|---|
| **Score:** | **17** |

**0.85**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/20**

**Comments:**

| | |
|---|---|
| **Score:** | **15** |

**0.75**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**CI = Total Score/40**

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**1.00**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.81** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| W1-T1-HR & W2-T2-HR | 8 | 41.4260 | -77.8498 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | 0 | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 0 | 1, 2 or 4 | | 100-300 ft. | 2 | 1 | 2 |
| Total Scores: | 0-100 ft. | 0 | | | 100-300 ft. | 2 | | |

**Road Comments: One dirt/grass access road and one drainange impound exist in the Wetland ZOI.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | X | 1 | |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | X | | |
| Eroding banks/slopes | X | | |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| phar | 4 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/30/2019 | 0.10 | 9 | 0.35 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Jim Haney, David Wood | 41.432746 | -77.768127 | |

**Assessment Area 9 consists of wetlands W5-T7A-HR (PFO) and W6-T7A-HR (PFO).**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 95% | 5% | | | | | **Total Score:** | **CI** |
| | Score: | 20 | 3 | | | | | | |
| | Total Sub-score: | 19.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 | **19.15** | **0.96** |

**Comments: Primary land uses includes forest, wetlands, and an existing dirt access road.**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 |
| **b. Roadbed 100-300:** | 17 | * (0.33) | 6 |
| | | **Total Score:** | **17** |
| | | | **0.85** |

**Comments: One dirt/grass access road and one drainage impound exist in the 100' and 300' buffers.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 8 | **Total Score** | |
| **b. Vegetation Sub-Score:** | 15 | **23** | **0.58** |

**4. Hydrologic Modification Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **1.00** |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**5. Sediment Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **0.95** |

**Comments:**

| | |
|---|---|
| **Score:** | **19** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **1.00** |
| **b. Contaminant Score** | 20 | **40** | |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.89** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| W1-T1-HR & W2-T2-HR | 8 | 41.4260 | -77.8498 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1 | 0 |
| Total Scores: | 0-100 ft. | 2 | | | 100-300 ft. | 2 | | |

**Road Comments: One dirt/grass access road exist in the 100' and 300' buffers.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| mivi | | | 30 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: 30 %**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-200 | Hensel Replacement | 7/30/2019 | 0.01 | 9 | 0.02 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Jim Haney, David Wood | 41.405073 | -77.770740 | Impact area rounded up to 0.01 acres. Actual impact area is 0.005 acres. |

**Assessment Area 9 consists of wetlands W3-T7A-HR (PFO and W4-T7A-HR (PFO).**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | % | | | | | | Total Score: | CI |
|---|---|---|---|---|---|---|---|---|---|
| **Scoring:** | % ZOI Area: | 81% | 7% | 3% | 9% | | | | |
| | Score: | 20 | 16 | 8 | 3 | | | | |
| | Total Sub-score: | 16.20 | 1.12 | 0.24 | 0.27 | 0.00 | 0.00 | **17.83** | **0.89** |

**CI = Total Score/20**

**Comments: Primary land uses includes forest, wetlands, an existing pipeline ROW, and an existing dirt access road.**

**2. Roadbed Presence Index**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

| | Condition Score | Weighting | Sub-Scores |
|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 |
| **b. Roadbed 100-300:** | 17 | * (0.33) | 6 |
| | | **Total Score:** | **17** |

**CI = Total Score/20** **0.85**

**Comments: One dirt/grass access road and one drainage impound exist in the 100' and 300' buffers.**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Invasive Sub-Score:** | 20 | **Total Score** |
| **b. Vegetation Sub-Score:** | 15 | **35** |

**CI = Total Score/40** **0.88**

**4. Hydrologic Modification Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **20** |

**CI = Total Score/20** **1.00**

**5. Sediment Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | |
|---|---|
| **Score:** | **19** |

**CI = Total Score/20** **0.95**

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. |
| SCORE | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | | |
|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** |
| **b. Contaminant Score** | 20 | **40** |

**CI = Total Score/40** **1.00**

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.93** |

## Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

### Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Hensel Replacement | | | | David Wood, Paul Fisher, Carissa Butler |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| W1-T1-HR & W2-T2-HR | 8 | 41.4260 | -77.8498 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 1 | 2 | 2 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1 | 0 |
| Total Scores: | 0-100 ft. | 2 | | | 100-300 ft. | 2 | | |

**Road Comments: One dirt/grass access road exist in the 100' and 300' buffers.**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | | | X |
| ***Dead or dying trees (trunks still standing)*** * | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

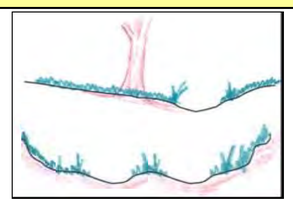
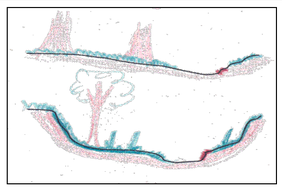
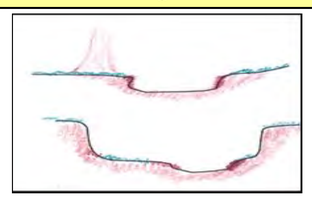
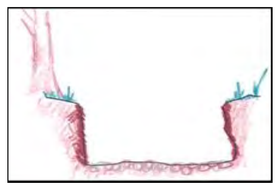
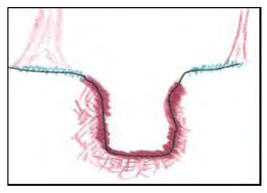
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAMS200 | Leidy South - Hensel Replacement | | Chapman Twp., Clinton Co. | 7/25/2019 | Designated: EV, MV | Existing: | 11 | 293 ft |
| **Latitude** | 41.415648 | **Longitude** | -77.835911 | **FGM Level 1 Channel Classification** | | | B4 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| Charly Bloom | Drury run: S2-T7A-HR | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. |  **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 18 | 0.90 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | **High** | **Low** | **High** | **Low** | **High** | **Low** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Optimal | Marginal | Poor | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 40% | 30% | 24% | 7% | | | 0.74 |
| | Score: | 20 | 17 | 6 | 4 | | | |
| | **Total Sub-score:** | **8.00** | **5.10** | **1.44** | **0.28** | **0.00** | **0.00** | |
| | Condition Category | **Optimal** | **Optimal** | | | | | |
| **Left Side** | % Riparian Area: | 65% | 35% | | | | | 0.95 |
| | Score: | 20 | 17 | | | | | |
| | **Total Sub-score:** | **13.00** | **5.95** | **0.00** | **0.00** | **0.00** | **0.00** | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.84 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | Comments: |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | **High** / **Low** | **High** / **Low** | **High** / **Low** | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | | | | | | | | Side Sub-Index | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | **Marginal** | **Optimal** | **Marginal** | **Optimal** | | | | | |
| **Right Side** | % Riparian Area: | 11% | 65% | 24% | | | | **0.77** | **Side Sub-Index = SUM(%Areas*Scores)/20** | |
| | Score: | 8 | 20 | 6 | | | | | | |
| | Total Sub-score: | **0.88** | **13.00** | **1.44** | **0.00** | **0.00** | **0.00** | | | |
| | Condition Category | **Optimal** | **Optimal** | | | | | | | |
| **Left Side** | % Riparian Area: | 55% | 45% | | | | | **0.93** | **CI = (Left Side CI + Right Side CI)/2** | **CI** |
| | Score: | 20 | 17 | | | | | | | **0.85** |
| | Total Sub-score: | **11.00** | **7.65** | **0.00** | **0.00** | **0.00** | **0.00** | | | |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | Comments: Not applicable. Intermittent stream. | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **SCORE 17** | **0.85** |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | Comments: | |
|---|---|---|---|---|---|---|---|
| | **Negligible** | **Minor** | | **Moderate** | | **Severe** | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.<br>**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.<br>**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | |
| | | **High** | **Low** | **High** | **Low** | | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 2 1 | **SCORE 18** | **0.90** |

| **RIVERINE CONDITION INDEX (RCI)** | | **RCI** |
|---|---|---|
| ***NOTE:* The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.87** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

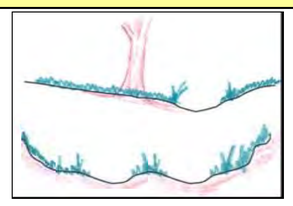
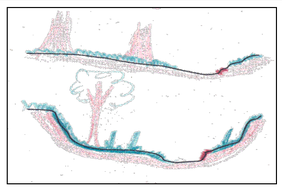
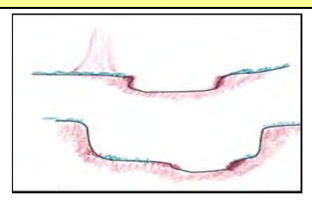
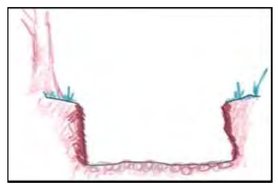
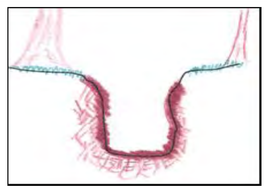
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| WILLIAMS200 | Leidy South - Hensel Replacement | Chapman Twp., Clinton Co. | 07/25/2019 | Designated: EV,MF | Existing: N/A | 12 | 698 ft |
| **Latitude** | 41.410547 | **Longitude** | -77.791570 | **FGM Level 1 Channel Classification** | | B6 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| NJD | Hensel Fork: S1-T7-HR | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. |  **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 16 | 0.80 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | **High** | **Low** | **High** | **Low** | **High** | **Low** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | | | | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | | | | | | | | |
| **Right Side** | % Riparian Area: | 64% | 4% | 17% | 14% | | | 0.94 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 20 | 17 | 7 | 4 | | | | |
| | **Total Sub-score:** | **12.80** | **0.68** | **1.19** | **4.14** | **0.00** | **0.00** | | |
| | Condition Category | | | | | | | | |
| **Left Side** | % Riparian Area: | 55% | 3% | 42% | | | | 0.72 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 20 | 17 | 7 | | | | | |
| | **Total Sub-score:** | **11.00** | **0.51** | **2.94** | **0.00** | **0.00** | **0.00** | | |

| CI |
|---|
| 0.83 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | Comments: |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | **High** | **Low** | **High** | **Low** | **High** | **Low** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | | | | | | | | Side Sub-Index | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | | | | | | | | | |
| **Right Side** | % Riparian Area: | 37% | 49% | 14% | | | | **0.57** | **Side Sub-Index = SUM(%Areas*Scores)/20** | |
| | Score: | 20 | 7 | 4 | | | | | | |
| | Total Sub-score: | **7.40** | **3.43** | **0.56** | **0.00** | **0.00** | **0.00** | | | |
| | Condition Category | | | | | | | | | |
| **Left Side** | % Riparian Area: | 86% | 0.2% | 14% | | | | **0.91** | **CI = (Left Side CI + Right Side CI)/2** | **CI** |
| | Score: | 20 | 17 | 7 | | | | | | **0.74** |
| | Total Sub-score: | **17.20** | **0.03** | **0.97** | **0.00** | **0.00** | **0.00** | | | |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | Comments: | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **SCORE 15** | **0.75** |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | Comments: | |
|---|---|---|---|---|---|---|---|---|
| | **Negligible** | **Minor** | | **Moderate** | | **Severe** | | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | |
| | | **High** | **Low** | **High** | **Low** | | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | **SCORE 14** | **0.70** |

| **RIVERINE CONDITION INDEX (RCI)** | | **RCI** |
|---|---|---|
| ***NOTE:* The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.76** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

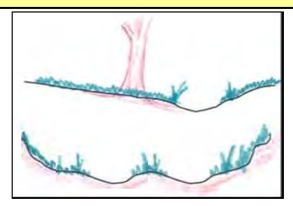
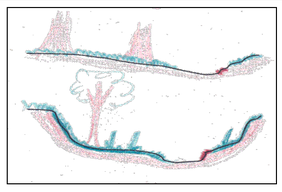
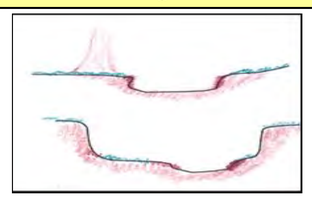
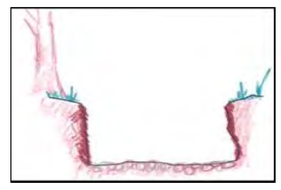
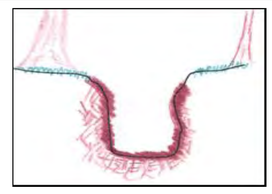
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| WILLIAMS200 | Leidy South - Hensel Replacement | Clinton County | 07/25/2019 | Designated: EV, MF | Existing: M/A | 13 | 304 ft |
| Latitude | 41.409447 | Longitude | -77.787395 | FGM Level 1 Channel Classification | | B3 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| NJD | Patty Run: S7-T7-HR | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| |  |  |  |  |  |
| **Channel / Floodplain** | **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. | **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. | **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 18 | 0.90 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 54% | 46% | | | | | 0.70 |
| | Score: | 20 | 7 | | | | | |
| | **Total Sub-score:** | **10.80** | **3.22** | **0.00** | **0.00** | **0.00** | **0.00** | |
| | Condition Category | **Optimal** | **Marginal** | | | | | |
| **Left Side** | % Riparian Area: | 53% | 47% | | | | | 0.69 |
| | Score: | 20 | 7 | | | | | |
| | **Total Sub-score:** | **10.60** | **3.29** | **0.00** | **0.00** | **0.00** | **0.00** | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.70 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | Comments: |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | **High** / **Low** | **High** / **Low** | **High** / **Low** | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 87% | 13% | | | | | **0.92** | **Side Sub-Index = SUM(%Areas*Scores)/20** |
| | Score: | 20 | 7 | | | | | | |
| | Total Sub-score: | **17.40** | **0.91** | **0.00** | **0.00** | **0.00** | **0.00** | | |
| | Condition Category | **Optimal** | **Marginal** | | | | | | |
| **Left Side** | % Riparian Area: | 57% | 43% | | | | | **0.72** | **CI = (Left Side CI + Right Side CI)/2** |
| | Score: | 20 | 7 | | | | | | **CI** |
| | Total Sub-score: | **11.40** | **3.01** | **0.00** | **0.00** | **0.00** | **0.00** | | **0.82** |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | Comments: | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **SCORE 18** | **0.90** |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | Comments: | |
|---|---|---|---|---|---|---|---|
| | **Negligible** | **Minor** | | **Moderate** | | **Severe** | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.<br>**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.<br>**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | |
| | | **High** / **Low** | | **High** / **Low** | | | **CI = (Score)/20** / **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | **SCORE 14** / **0.70** |

| **RIVERINE CONDITION INDEX (RCI)** | | **RCI** |
|---|---|---|
| ***NOTE:* The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.80** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

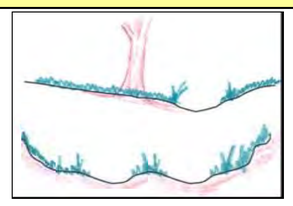
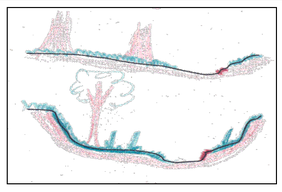
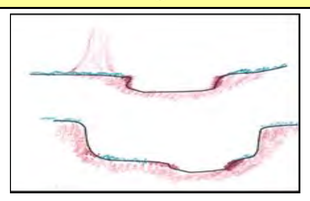
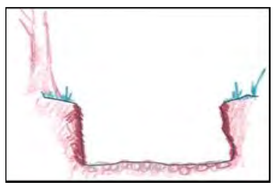
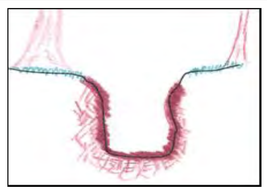
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| WILLIAMS200 | Leidy South - Hensel Replacement | | Clinton County | 07/25/2019 | Designated: EV, MF | Existing: N/A | 14 | 287 ft |
| Latitude | 41.408862 | Longitude | -77.785261 | FGM Level 1 Channel Classification | | | A3 | |

| Evaluator(s) | Stream Name and Information |
|---|---|
| CMG, JRH | UNT to Patyy Run: S9-T6-HR |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | Severe |
| |  |  |  |  |  |
| **Channel / Floodplain** | **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. | **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. | **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 16 | 0.80 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | Optimal | Suboptimal | | Marginal | | Poor | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | High | Low | High | Low | High | Low |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 45% | 55% | | | | | 0.64 |
| | Score: | 20 | 7 | | | | | |
| | **Total Sub-score:** | **9.00** | **3.85** | **0.00** | **0.00** | **0.00** | **0.00** | |
| | Condition Category | **Optimal** | **Marginal** | | | | | |
| **Left Side** | % Riparian Area: | 54% | 46% | | | | | 0.70 |
| | Score: | 20 | 7 | | | | | |
| | **Total Sub-score:** | **10.80** | **3.22** | **0.00** | **0.00** | **0.00** | **0.00** | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.67 |

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | Comments: |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | **High** / **Low** | **High** / **Low** | **High** / **Low** | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index | Side Sub-Index = SUM(%Areas*Scores)/20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 57% | 43% | | | | | **0.72** | | |
| | Score: | 20 | 7 | | | | | | | |
| | Total Sub-score: | **11.40** | **3.00** | **0.00** | **0.00** | **0.00** | **0.00** | | | |
| | Condition Category | **Optimal** | **Marginal** | | | | | | | |
| **Left Side** | % Riparian Area: | 89% | 11% | | | | | **0.93** | CI = (Left Side CI + Right Side CI)/2 | CI |
| | Score: | 20 | 7 | | | | | | | **0.82** |
| | Total Sub-score: | **17.80** | **0.77** | **0.00** | **0.00** | **0.00** | **0.00** | | | |

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

| | Condition Category | | | | Comments: | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | CI = (Score)/20 | CI |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | SCORE 16 | 0.80 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | Comments: | |
|---|---|---|---|---|---|---|---|
| | **Negligible** | **Minor** | | **Moderate** | | **Severe** | | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.<br>**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.<br>**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | |
| | | **High** / **Low** | | **High** / **Low** | | | CI = (Score)/20 | CI |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | SCORE 15 | 0.75 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.77** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

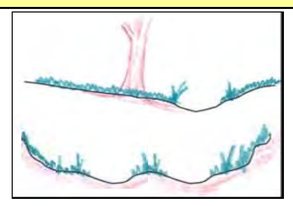
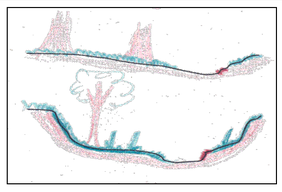
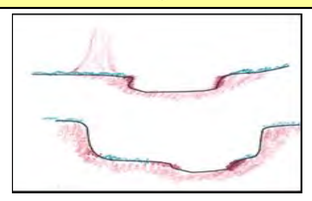
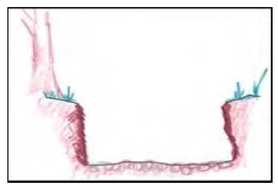
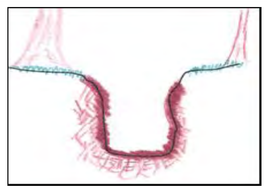
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|---|
| Williams-18-200 | Leidy South - Hensel Replacement | | Chapman Twp., Clinton Co. | 7/26/19 | Designated: EV, MF | Existing: | 15 | 191 ft |
| **Latitude** | **41.426678** | **Longitude** | **-77.849927** | **FGM Level 1 Channel Classification** | | | A6 | |

| Evaluator(s) | Stream Name and Information | Notes: |
|---|---|---|
| CB | UNT to Drury Run: S1-T1-HR | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. |  **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| **SCORE** | **13** | **0.65** |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** | | | | | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | | | |
| | | **High** | **Low** | **High** | **Low** | **High** | **Low** | | | | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 | | | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Optimal | Marginal | Poor | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 50% | 3% | 6% | 41% | | | **0.70** | **Side Sub-Index = SUM(%Areas*Scores)/20** |
| | Score: | 17 | 18 | 9 | 4 | | | | |
| | **Total Sub-score:** | **8.50** | **0.61** | **0.54** | **4.41** | **0.00** | **0.00** | | |
| | Condition Category | **Optimal** | **Poor** | **Optimal** | **Marginal** | | | | |
| **Left Side** | % Riparian Area: | 30% | 54% | 1% | 15% | | | **0.87** | **CI = (Left Side CI + Right Side CI)/2** |
| | Score: | 20 | 4 | 18 | 9 | | | | |
| | **Total Sub-score:** | **6.00** | **2.16** | **0.18** | **9.15** | **0.00** | **0.00** | | |

| CI |
|---|
| **0.79** |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | Comments: |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | **High** | **Low** | **High** | **Low** | **High** | **Low** | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Poor | | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 88% | 12% | | | | | **0.73** | **Side Sub-Index = SUM(%Areas*Scores)/20** |
| | Score: | 16 | 4 | | | | | | |
| | Total Sub-score: | **14.08** | **0.46** | **0.00** | **0.00** | **0.00** | **0.00** | | |
| | Condition Category | **Optimal** | **Poor** | | | | | | |
| **Left Side** | % Riparian Area: | 41% | 59% | | | | | **0.52** | **CI = (Left Side CI + Right Side CI)/2** |
| | Score: | 20 | 4 | | | | | | **CI** |
| | Total Sub-score: | **8.10** | **2.38** | **0.00** | **0.00** | **0.00** | **0.00** | | **0.63** |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | Comments: N/A. Intermittent Stream. | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **SCORE** | **0.00** |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | Comments: | |
|---|---|---|---|---|---|---|---|
| | **Negligible** | **Minor** | | **Moderate** | | **Severe** | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | |
| | | **High** | **Low** | **High** | **Low** | | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | **SCORE** 13 | **0.65** |

| **RIVERINE CONDITION INDEX (RCI)** | | **RCI** |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.68** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

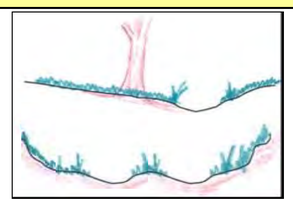
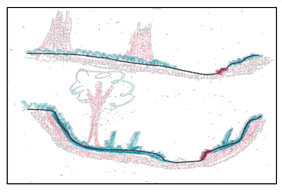
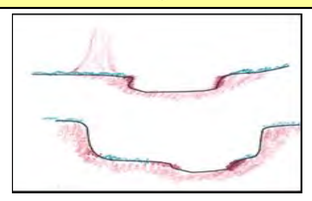
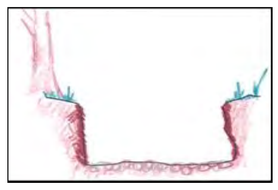
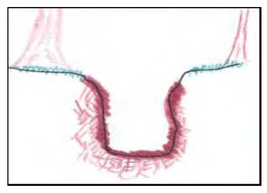
**Pennsylvania Department of Environmental Protection**

**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| Williams-18-200 | Leidy South - Hensel Replacement | Chapman Twp., Clinton Co. | 8/1/19 | Designated: EV, MF | Existing: | 16 | 292 ft |
| **Latitude** | 41.426678 | **Longitude** | -77.849927 | **FGM Level 1 Channel Classification** | | A3 | |

| Evaluator(s) | Stream Name and Information | Notes: UNT to Dark Hollow |
|---|---|---|
| Charly Bloom | S12-T6-HR | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. |  **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 18 | 0.90 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | | **Marginal** | | **Poor** |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | **Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | **Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | **Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| | | **High** | **Low** | **High** | **Low** | **High** | **Low** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 | 12 11 | 10 9 8 | 7 6 | 5 4 3 | 2 1 |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Marginal | | | | | Side Sub-Index |
|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 58% | 42% | | | | | 0.73 |
| | Score: | 20 | 7 | | | | | |
| | **Total Sub-score:** | **11.60** | **2.94** | **0.00** | **0.00** | **0.00** | **0.00** | |
| | Condition Category | **Optimal** | **Marginal** | | | | | |
| **Left Side** | % Riparian Area: | 46% | 54% | | | | | 0.65 |
| | Score: | 20 | 7 | | | | | |
| | **Total Sub-score:** | **9.20** | **3.78** | **0.00** | **0.00** | **0.00** | **0.00** | |

**Side Sub-Index = SUM(%Areas*Scores)/20**

| CI = (Left Side CI + Right Side CI)/2 | CI |
|---|---|
| | 0.69 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | Comments: |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Riparian ZOI** | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | **High** / **Low** | **High** / **Low** | **High** / **Low** | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | | | | | | | | Side Sub-Index | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Condition Category | **Optimal** | **Optimal** | **Marginal** | | | | | | |
| **Right Side** | % Riparian Area: | 51% | 11% | 38% | | | | **0.74** | **Side Sub-Index = SUM(%Areas*Scores)/20** | |
| | Score: | 20 | 18 | 7 | | | | | | |
| | Total Sub-score: | **10.20** | **1.98** | **2.66** | **0.00** | **0.00** | **0.00** | | | |
| | Condition Category | **Optimal** | **Marginal** | | | | | | | |
| **Left Side** | % Riparian Area: | 52% | 48% | | | | | **0.69** | **CI = (Left Side CI + Right Side CI)/2** | **CI** |
| | Score: | 20 | 7 | | | | | | | **0.72** |
| | Total Sub-score: | **10.40** | **3.36** | **0.00** | **0.00** | **0.00** | **0.00** | | | |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | Comments: | |
|---|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | | |
| **Instream Habitat/ Available Cover** | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **SCORE 18** | **0.90** |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | Comments: | |
|---|---|---|---|---|---|---|---|
| | **Negligible** | **Minor** | | **Moderate** | | **Severe** | | |
| **Channel Alteration** | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.<br>**Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. | | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.<br>**Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | |
| | | **High** | **Low** | **High** | **Low** | | **CI = (Score)/20** | **CI** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | | 10 9 8 7 6 | | 5 4 3 2 1 | **SCORE 15** | **0.75** |

| **RIVERINE CONDITION INDEX (RCI)** | | **RCI** |
|---|---|---|
| ***NOTE:* The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | **0.79** |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

# Riverine Assessment Form 1

**Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)**

**Pennsylvania Department of Environmental Protection**

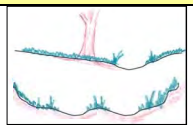
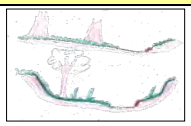
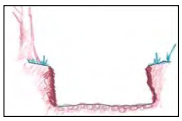
**For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.**

| Project # | Project Name | Locality | Date | Ch 93 Classification | | AA Id | Length |
|---|---|---|---|---|---|---|---|
| Williams-18-200 | Leidy South - Hensel Replacement | Chapman Twp., Clinton Co. | 8/7/19 | Designated: EV, MF | Existing: | 17 | 118 ft |

| Latitude | 41.415914 | Longitude | -77.834061 | FGM Level 1 Channel Classification | A5 |
|---|---|---|---|---|---|

| Evaluator(s) | Stream Name and Information | Notes: UNT to Drury Run |
|---|---|---|
| Charly Bloom | S1-T5-HR | |

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **Severe** |
| **Channel / Floodplain** |  **Channel Geometry:** These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow. |  **Channel Geometry:** These channels are slightly incised or overwidened and contain a few areas of active erosion.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.<br><br>**Active Floodplain Connection:** The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain. | **Channel Geometry:** These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;<br><br>**Active Floodplain Connection:** The bankfull stream flows have infrequent connection to the active floodplain. |  **Channel Geometry:** These channels are over-widened or incised and eroding vertically and/or laterally.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are not connected to the active floodplain. | **Channel Geometry:** These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.<br><br>**Channel Stability:** Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.<br><br>**Active Floodplain Connection:** The bankfull stream flows are never connected to the active floodplain. |
| **SCORE** | 20 19 18 17 | 16 15 14 13 | 12 11 10 9 | 8 7 6 5 | 4 3 2 1 |

**Comments:**

| CI = (Score)/20 | | CI |
|---|---|---|
| SCORE | 16 | 0.80 |

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | |
| **Riparian Vegetation (Floodplain)** | Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br><br>**Low Suboptimal:** Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br><br>**Low Marginal:** Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained | **High Poor:** Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br><br>**Low Poor:** Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | High | Low | High | Low | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | | |

**Comments:**

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

| | Condition Category | Optimal | Suboptimal | Marginal | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| **Right Side** | % Riparian Area: | 5% | 55% | 40% | | | | 0.60 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 18 | 15 | 7 | | | | | |
| | **Total Sub-score:** | 0.90 | 8.25 | 2.80 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Marginal | | | | | | |
| **Left Side** | % Riparian Area: | 5% | 95% | | | | | 0.38 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 18 | 7 | | | | | | |
| | **Total Sub-score:** | 0.90 | 6.65 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.49 |

# Riverine Assessment Form 1 - Page 2

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Riparian ZOI | Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | | | | | **High Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. | | | | **Low Suboptimal:** Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. | | | | **Low Marginal:** Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with | **High Poor:** Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. | | | | **Low Poor:** Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | |
| | | | | | | High | | | | Low | High | | | | | High | | | | | Low | |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

| | Condition Category | Optimal | Optimal | Marginal | | | | Side Sub-Index | |
|---|---|---|---|---|---|---|---|---|---|
| Right Side | % Riparian Area: | 60% | 40% | | | | | 0.59 | Side Sub-Index = SUM(%Areas*Scores)/20 |
| | Score: | 15 | 7 | | | | | | |
| | Total Sub-score: | 9.00 | 2.80 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| | Condition Category | Optimal | Marginal | | | | | | |
| Left Side | % Riparian Area: | 63% | 37% | | | | | 0.60 | CI = (Left Side CI + Right Side CI)/2 |
| | Score: | 15 | 7 | | | | | | |
| | Total Sub-score: | 9.45 | 2.59 | 0.00 | 0.00 | 0.00 | 0.00 | | |

| CI |
|---|
| 0.60 |

**4. INSTREAM HABITAT:**

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments:N/A Stream is not perennial. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| Instream Habitat/ Available Cover | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. | | | | | Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach. | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE | 0.00 |

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

| | Condition Category | | | | | | | | | | | | | | | | | | | | | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Negligible | | | | | Minor | | | | | Moderate | | | | | Severe | | | | | | |
| Channel Alteration | Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. | | | | | **Minor High:** Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present | | | | **Minor Low:** Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not | **Moderate High:** Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. | | | | **Moderate Low:** Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. | Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete. | | | | | | | | |
| | | | | | | High | | | | Low | High | | | | Low | | | | | | | CI = (Score)/20 | CI |
| SCORE | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SCORE 9 | 0.45 |

| RIVERINE CONDITION INDEX (RCI) | | RCI |
|---|---|---|
| ***NOTE:*** **The CIs and RCI should be rounded to 2 decimal places.** | **RCI = (Sum of all CI's)/5** | 0.58 |

***If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.***

**General Comments:**

ATTACHMENT B

FIGURES

**LEGEND**

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN-ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

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HENSEL REPLACEMENT

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LEIDY TOWNSHIP CLINTON COUNTY PENNSYLVANIA

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LEGEND

- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN-ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

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- WETLAND IMPACT
- WETLAND ASSESSMENT AREA
- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
- SURVEYED AREA
- LIMIT OF DISTURBANCE
- EXISTING GAS PIPELINE (APPROX.)
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- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
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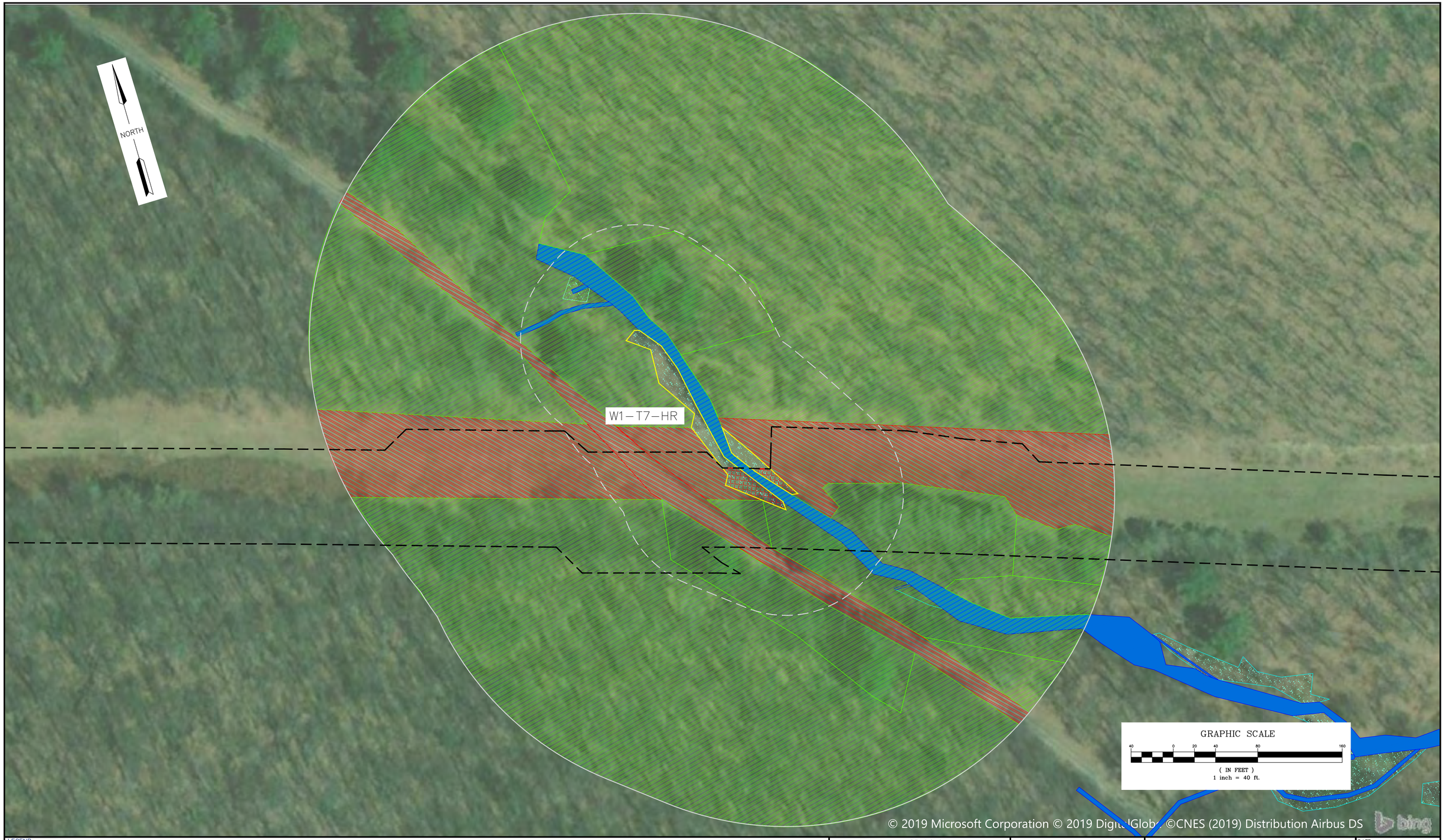


LEGEND

- WETLAND IMPACT
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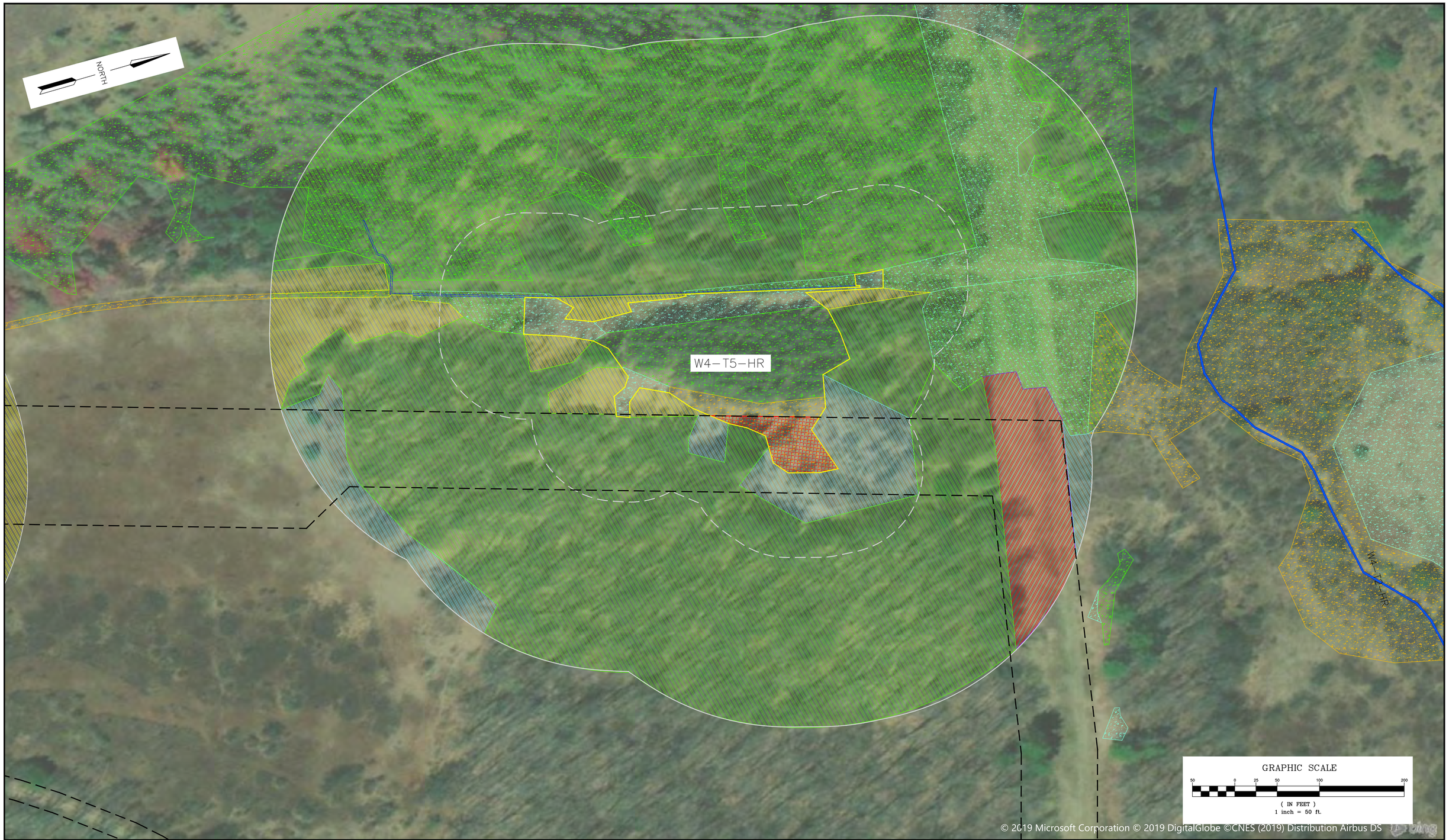


LEGEND

- WETLAND IMPACT
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- WETLAND ZONE OF INFLUENCE (ZOI)
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- SURVEYED AREA
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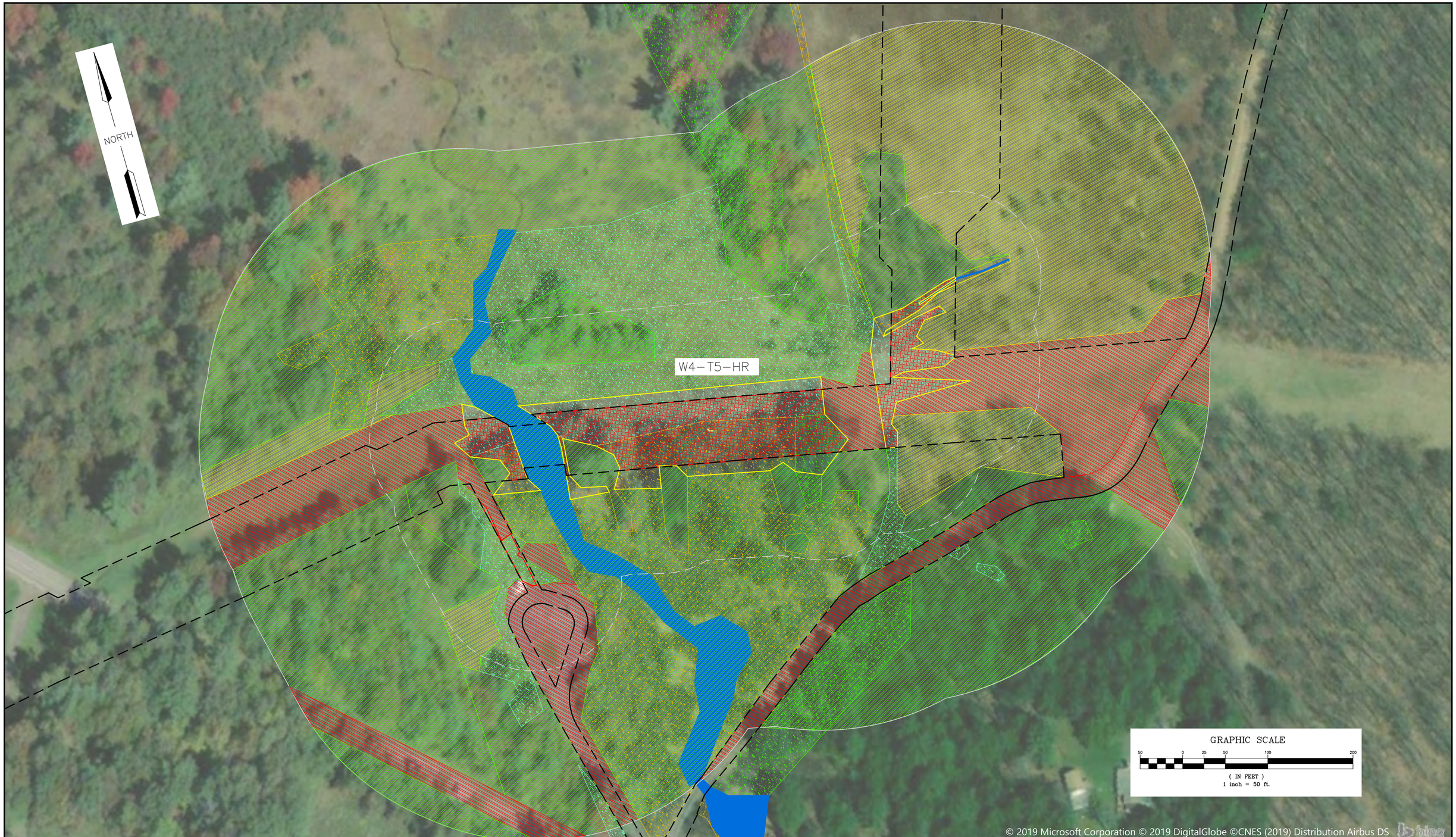


LEGEND

- WETLAND IMPACT
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- WETLAND ZONE OF INFLUENCE (ZOI)
- ROADBED PRESENCE BUFFER (100')
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- CONDITION CATEGORY – POOR

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- DELINEATED PEM WETLAND BOUNDARY
- DELINEATED PSS WETLAND BOUNDARY
- DELINEATED PFO WETLAND BOUNDARY
- DELINEATED POW WETLAND BOUNDARY
- DELINEATED STREAM CHANNEL
- OPEN–ENDED BOUNDARY
- CONDITION CATEGORY – OPTIMAL
- CONDITION CATEGORY – SUBOPTIMAL
- CONDITION CATEGORY – MARGINAL
- CONDITION CATEGORY – POOR

Williams

REVISIONS

| DATE | DESCRIPTIONS | APP |
|---|---|---|
| XX/XX/XX | ISSUED FOR REVIEW | KMC |

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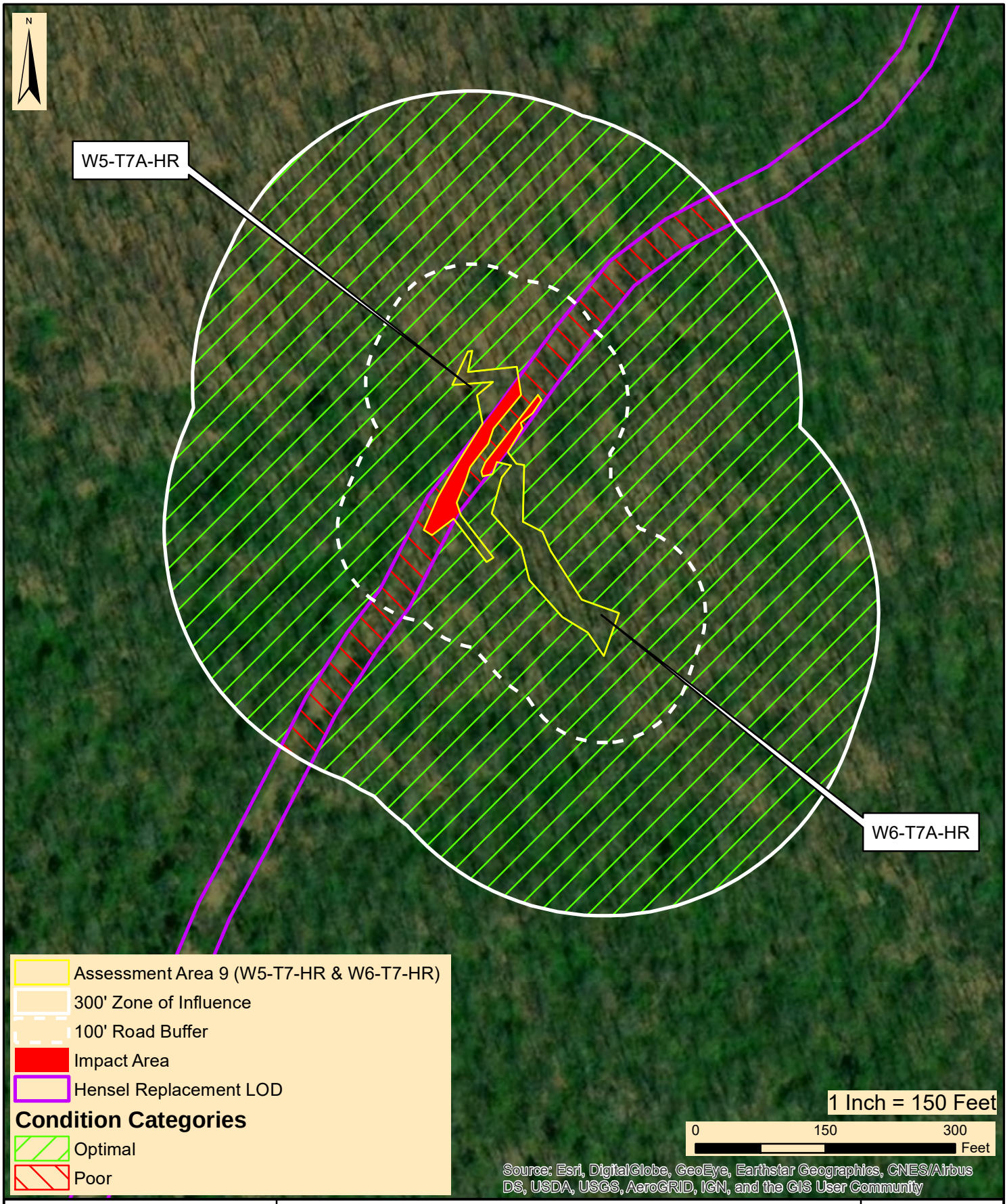
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

LEIDY SOUTH PROJECT
HENSEL REPLACEMENT

WETLAND FUNCTIONAL ASSESSMENT –
ASSESSMENT AREA 8 (W1–T1–HR)

LEIDY TOWNSHIP CLINTON COUNTY PENNSYLVANIA

DATE: 8/14/2019
DRAWN BY: CMB
CHECKED: KMC
DRAWING NO. WILLIAMS18200D008
SHEET NO. 8

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WETLAND FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 9 (W5-T7A-HR & W6-T7A-HR)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

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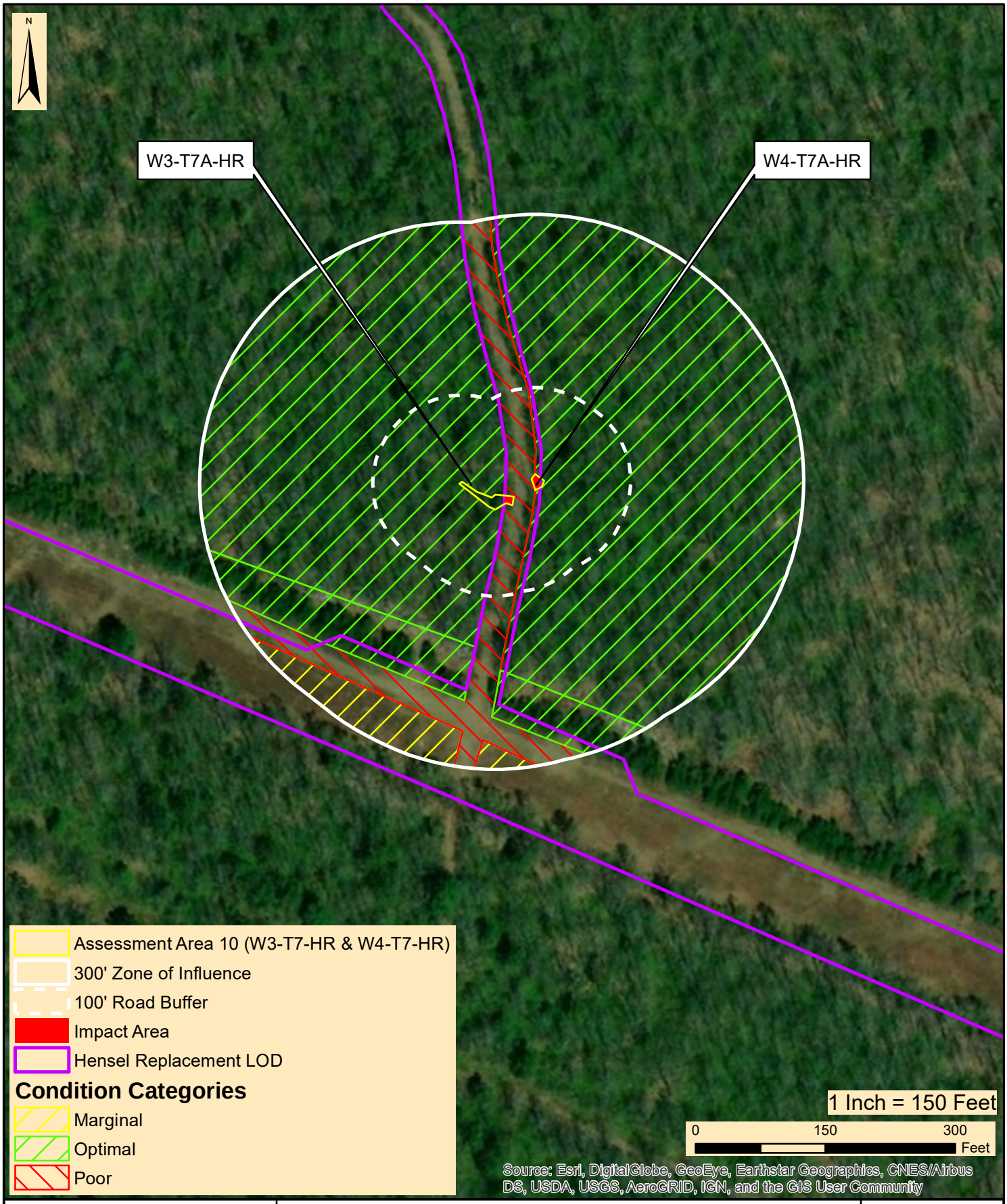
| Drawn By: | JH |
| Figure Number: | 9 |

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LEIDY SOUTH PROJECT - HENSEL REPLACEMENT

WETLAND FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 9 (W3-T7A-HR & W4-T7A-HR)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

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| Date: | 07/30/2019 |
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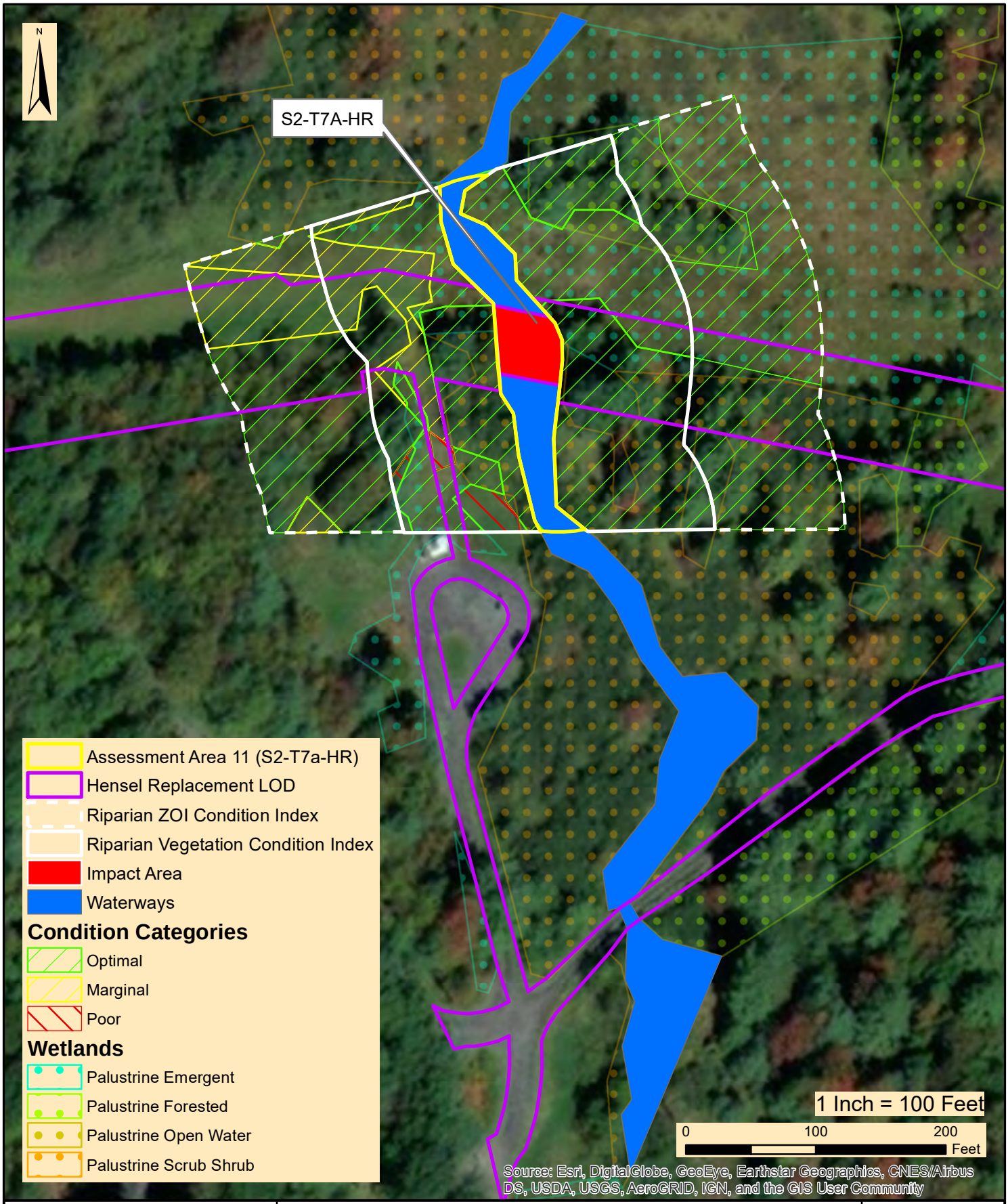


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LEIDY SOUTH PROJECT - HENSEL REPLACEMENT

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 11 (S2-T7A-HR)

LEIDY TOWNSHIP CLINTON COUNTY PENNSYLVANIA

| | |
|---|---|
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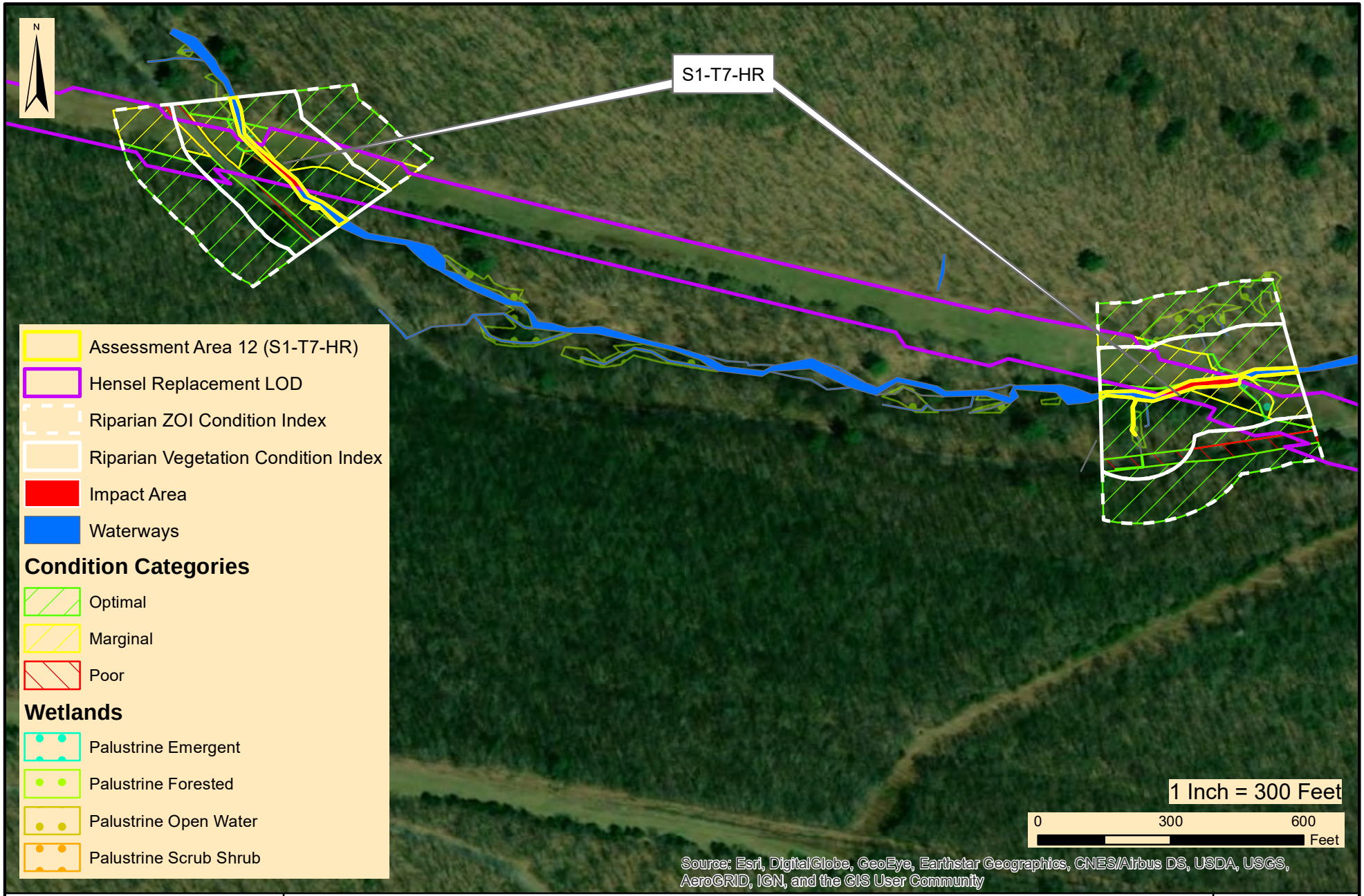


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STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 12 (S1-T7-HR)

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
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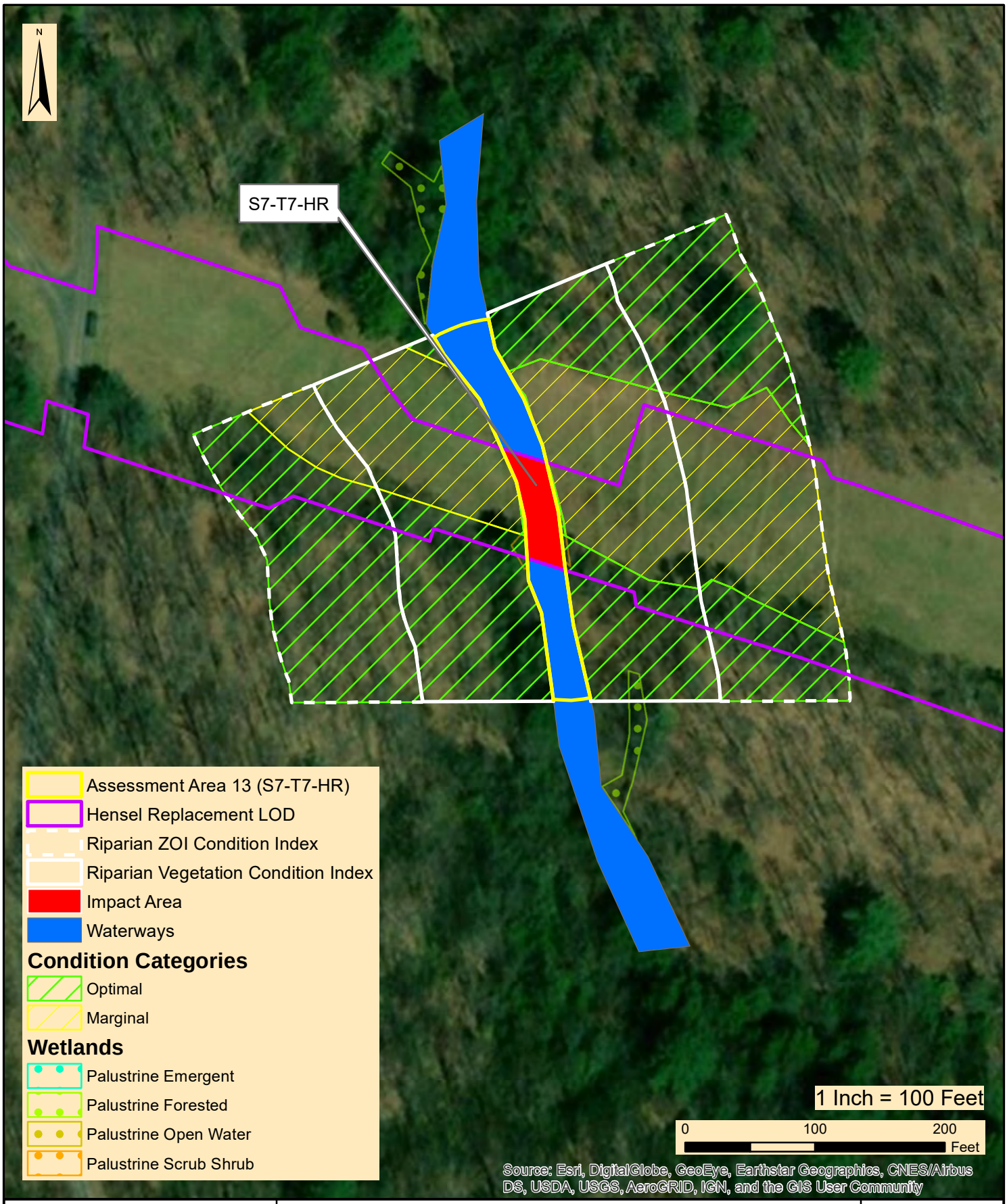


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LEIDY SOUTH PROJECT - HENSEL REPLACEMENT

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 13 (S7-T7-HR)

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 07/31/2019 |
| WHM Drawing Number: | WILLIAMS200A013 |
| Drawn By: | CMG |
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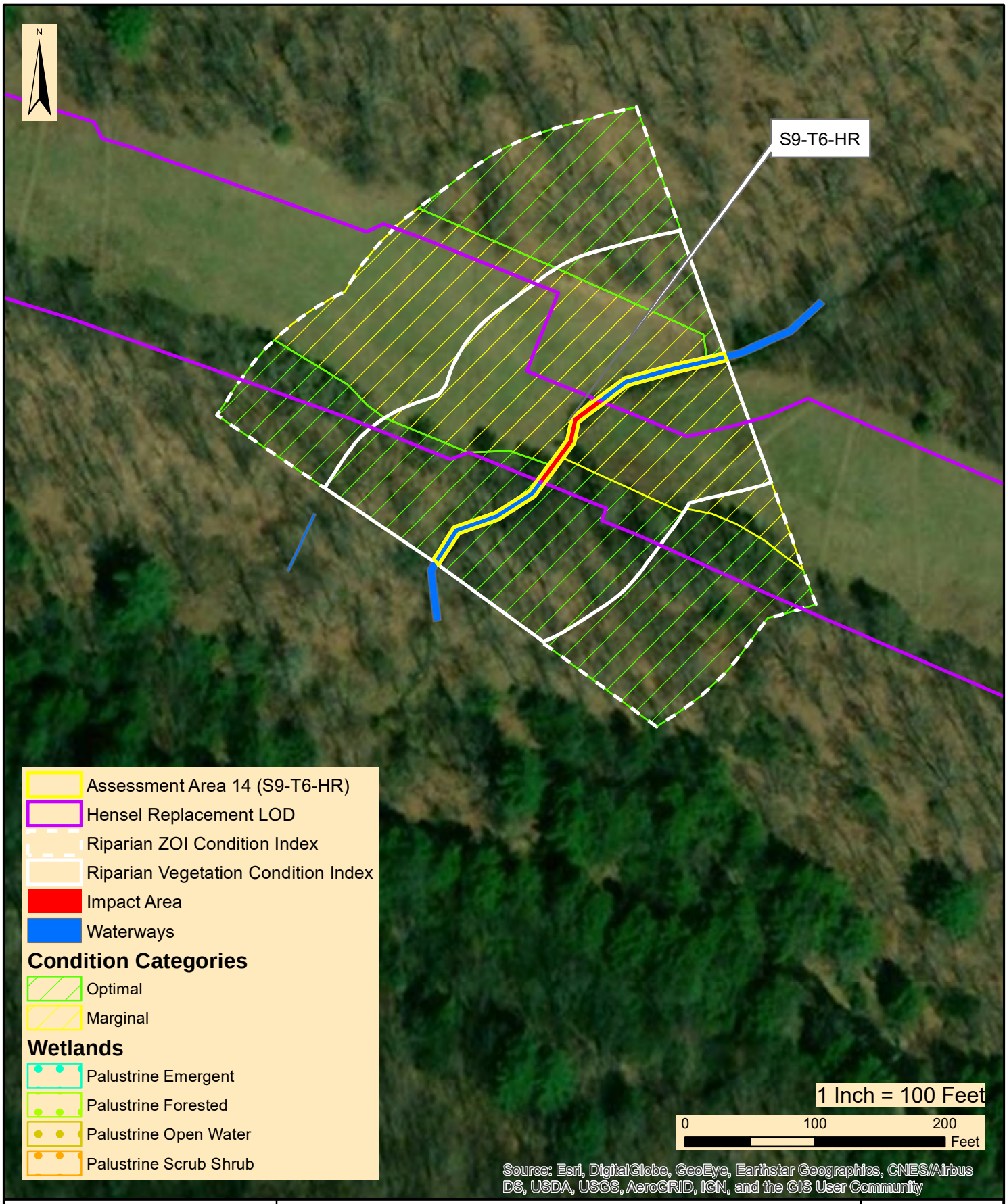


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LEIDY SOUTH PROJECT - HENSEL REPLACEMENT

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 14 (S9-T6-HR)

LEIDY TOWNSHIP | CLINTON COUNTY | PENNSYLVANIA

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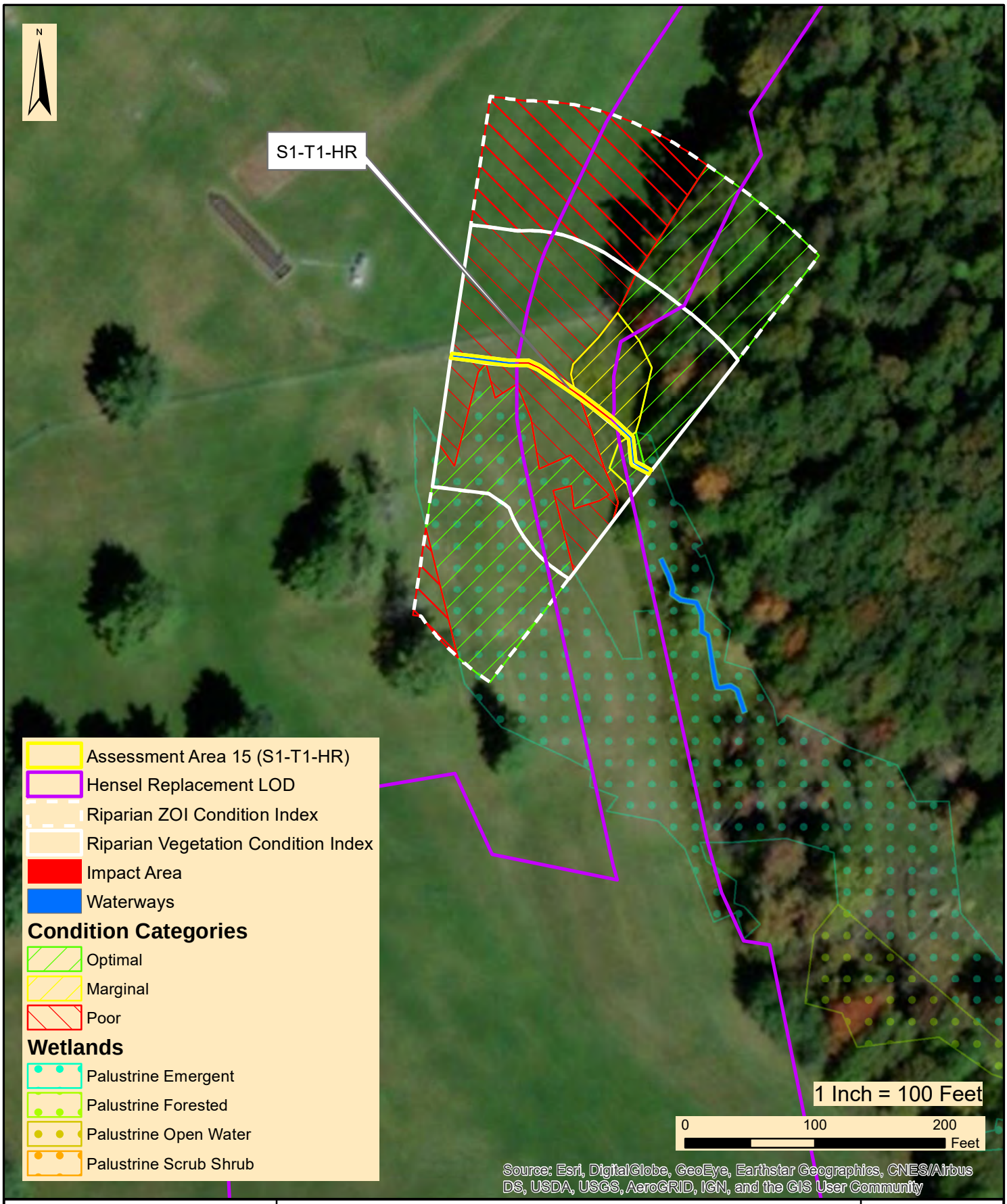


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LEIDY SOUTH PROJECT - HENSEL REPLACEMENT

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 15 (S1-T1-HR)

LEIDY TOWNSHIP CLINTON COUNTY PENNSYLVANIA

| | |
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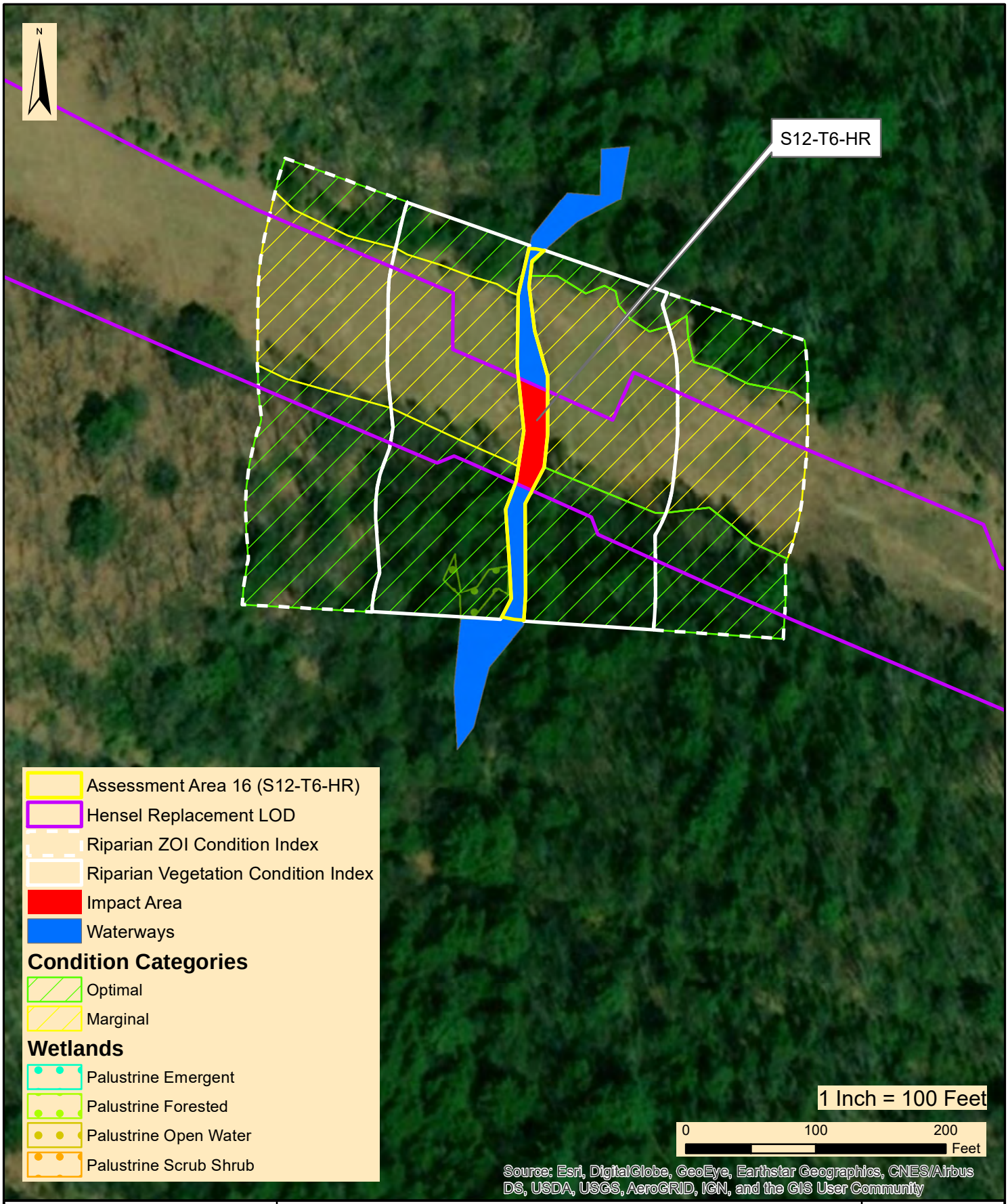


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**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - HENSEL REPLACEMENT

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 16 (S12-T6-HR)

CHAPMAN TOWNSHIP CLINTON COUNTY PENNSYLVANIA

| | |
|---|---|
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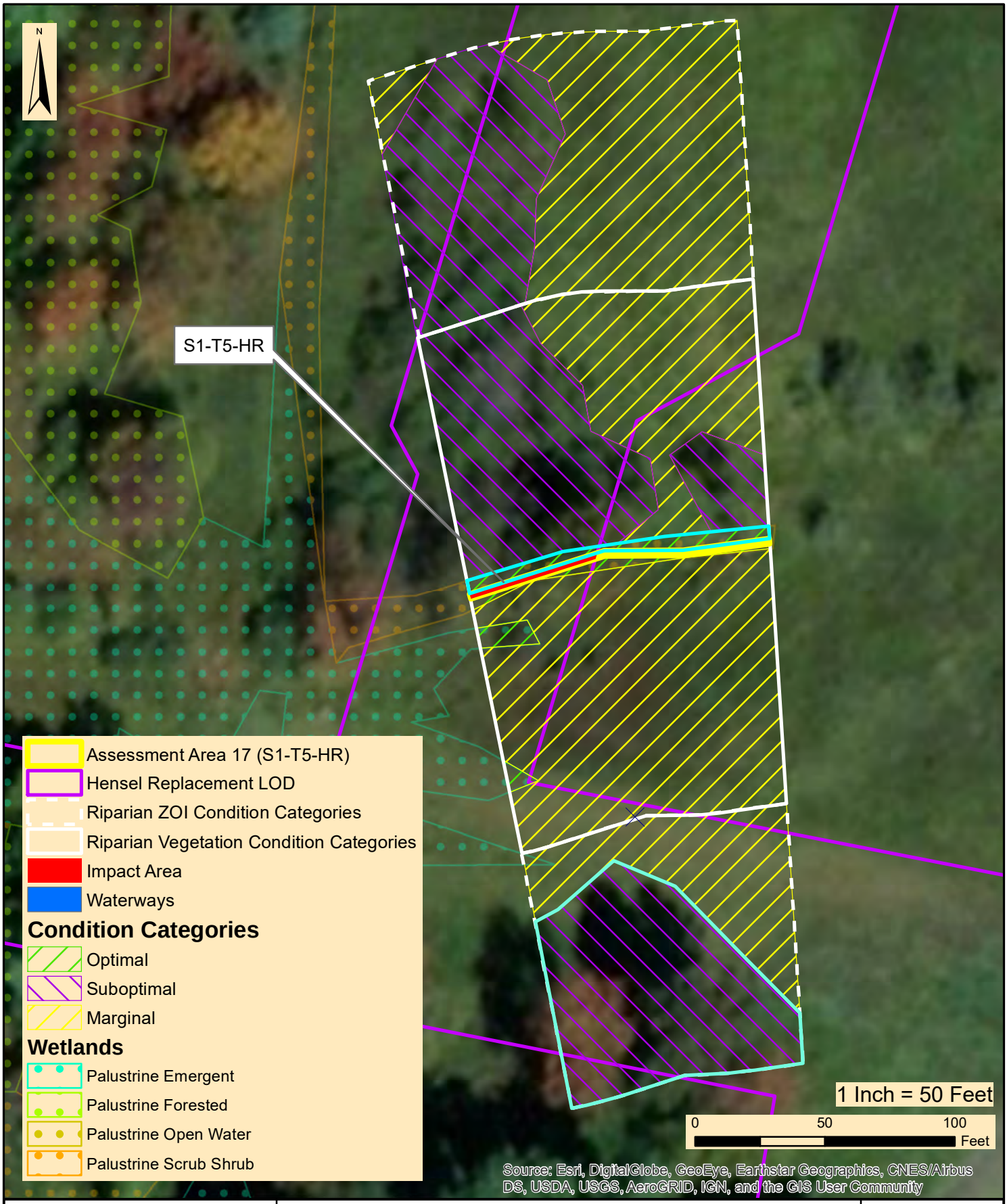


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**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - HENSEL REPLACEMENT

STREAM FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 17 (S1-T5-HR)

LEIDY TOWNSHIP CLINTON COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 08/07/2019 |
| WHM Drawing Number: | WILLIAMS200A017 |
| Drawn By: | CSB |
| Figure Number: | 17 |

# APPENDIX F

# COMPRESSOR STATION 607A WETLAND AND WATERCOURSE DELINEATION REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX F
COMPRESSOR STATION 607A WETLAND AND WATERCOURSE DELINEATION REPORT

FAIRMOUNT TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

## Table of Contents

Section


1.0 Introduction

2.0 Desktop Analysis

- 2.1 USGS Topographic and LiDAR Data
- 2.2 Aerial Photography
- 2.3 National Wetland Inventory
- 2.4 USDA/NRCS Soil Descriptions

3.0 Results

4.0 Conclusions

5.0 References


Figures


1 Project Location Map
2 USDA-NRCS Soils and NWI Wetlands Map


Attachments


A Wetland and Water Resource Delineation Data Package

- .... Water Resources Delineation Map
- .... Photographic Documentation
- .... Wetland, Upland and Waterway Data Forms

B Wetland and Water Resource Summary Tables

C Pennsylvania Level 2 Rapid Assessment Report

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX F
COMPRESSOR STATION 607A WETLAND AND WATERCOURSE DELINEATION REPORT

FAIRMOUNT TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Transco) to conduct a delineation of wetland and water resources associated with the Compressor Station 607A (Project) located in Fairmount Township, Luzerne County, Pennsylvania (Figure 1 – Project Location Map). The purpose of this investigation was to determine if regulated wetlands and waters exist within the subject project area in accordance with U.S. Army Corps of Engineers (USACE) guidelines which as regulated under Section 404 of the Clean Water Act (CWA) and Pa Code 25 Chapter 105. This report provides information on the desktop analysis, data collected, delineation field findings, and results pertaining to wetland and water resources identified in the study area. The delineation was performed in March 2019, April 2019 and May 2019.

# 2.0 DESKTOP ANALYSIS

Prior to conducting field investigations, a review of natural resource data associated with the investigation area was completed to help establish probable areas where wetlands and watercourses could be located before conducting the onsite field investigation. The following sections outlined specific data reviewed for the investigation area.

## 2.1 USGS TOPOGRAPHIC AND LiDAR DATA

The 7.5 minute USGS quadrangle for Sweet Valley, Pennsylvania, was reviewed in the vicinity of the project area. For more detailed topographic information, PAMAP LiDAR (2-foot Intervals) were reviewed to determine slope breaks and microtopography that could result in wetlands and/or waterways.

## 2.2 AERIAL PHOTOGRAPHY

Multiple sources of online accessible current and historical aerial imagery were reviewed. In particular, leaf-off aerial imagery was evaluated for saturation that may persist long enough into the growing season to create wetland conditions.

## 2.3 NATIONAL WETLAND INVENTORY

The U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) mapping within and surrounding the project area is presented in Figure 2 - USDA-NRCS Soils and NWI Wetlands Map. According to NWI mapping there are no NWI wetlands located within the investigation area.

## 2.4 USDA/NRCS SOIL DESCRIPTIONS

The soil associations onsite are identified through the soil map units mapped by the United States Department of Agriculture – Natural Resources Conservation Service

(USDA-NRCS) in the Soil Survey of Luzerne County, Pennsylvania. In addition, the hydric soils list for Luzerne County was reviewed to determine if these soils are Hydric Soils or contain Hydric Inclusion. There are 12 soil mapping units located within the investigation area. Each soil series and their hydric rating is provided in Table 2-1.

| Soil Mapping Unit | Map Unit Name | Slope (%) | Hydric Soil/ Hydric Inclusion |
|---|---|---|---|
| BkB | Bath channery silt loam | 3 to 8 | No |
| LaB | Lackawanna channery silt loam | 3 to 8 | No |
| LaC | Lackawanna channery silt loam | 8 to 15 | No |
| LaD | Lackawanna channery silt loam | 15 to 25 | No |
| LcB | Lackawanna channery silt loam, extremely stony | 3 to 8 | No |
| LcD | Lackawanna channery silt loam, extremely stony | 8 to 25 | No |
| MoB | Morris channery silt loam | 0 to 8 | Yes |
| MsB | Morris channery silt loam, extremely stony | 0 to 8 | Yes |
| OlC | Oquaga and Lordstown channery silt loam | 8 to 15 | No |
| OpD | Oquaga and Lordstown extremely stony silt loam | 8 to 25 | No |
| OXF | Oquaga and Lordstown extremely stony silt loam | Steep | No |
| WlB | Wellsboro channery silt loam | 3 to 8 | No |

Table 2-1: Soil Mapping Unit and Hydric Soils Listing

## 3.0 RESULTS

After the completion of a desktop analysis, a formal wetland delineation was completed. Areas exhibiting the potential for regulated wetlands and waters were evaluated to determine whether they satisfied the USACE and/or PADEP requirements. Attachment A includes specific information for each resource including wetland delineation mapping, photographic documentation, and data forms. Attachment B – Wetland and Water Resource Summary Tables, provides specific information for each resource identified within the investigation area. The Pennsylvania Level 2 Rapid Assessment Report is provided in Attachment C. The following sections provide a brief summary of the resources identified within the investigation area.

### 3.1 WETLANDS

Ten wetlands were identified during the delineation. Most wetlands delineated are isolated. One large Palustrine Emergent (PEM)/Palustrine Forested (PFO) wetland complex was identified in the southeast corner and is hydrologically connected several stream channels. A PEM/ Palustrine scrub-shrub (PSS) wetland complex was identified in the northern portion of the investigation area. A total of 183,688 square feet of PEM wetlands, 980 square feet of PSS wetlands, and 43,760 square feet of PFO wetlands were identified during the delineation.

### 3.2 WATERWAYS

Nine stream channels were identified during the delineation. All channels delineated were intermittent but one, which was ephemeral. All channels flowed in an eastern direction. A total of 26,845 square feet of channel were identified. Approximately

298 square feet of ephemeral channel and 26,547 square feet of intermittent channels were identified.

## 4.0 CONCLUSIONS

Based on the results of the field investigation 228,408 square feet of wetlands 26,845 square feet of stream channel were identified within the investigation area. Any impacts to the identified resources would require authorization under PADEP and USACE guidelines.

## 6.0 REFERENCES


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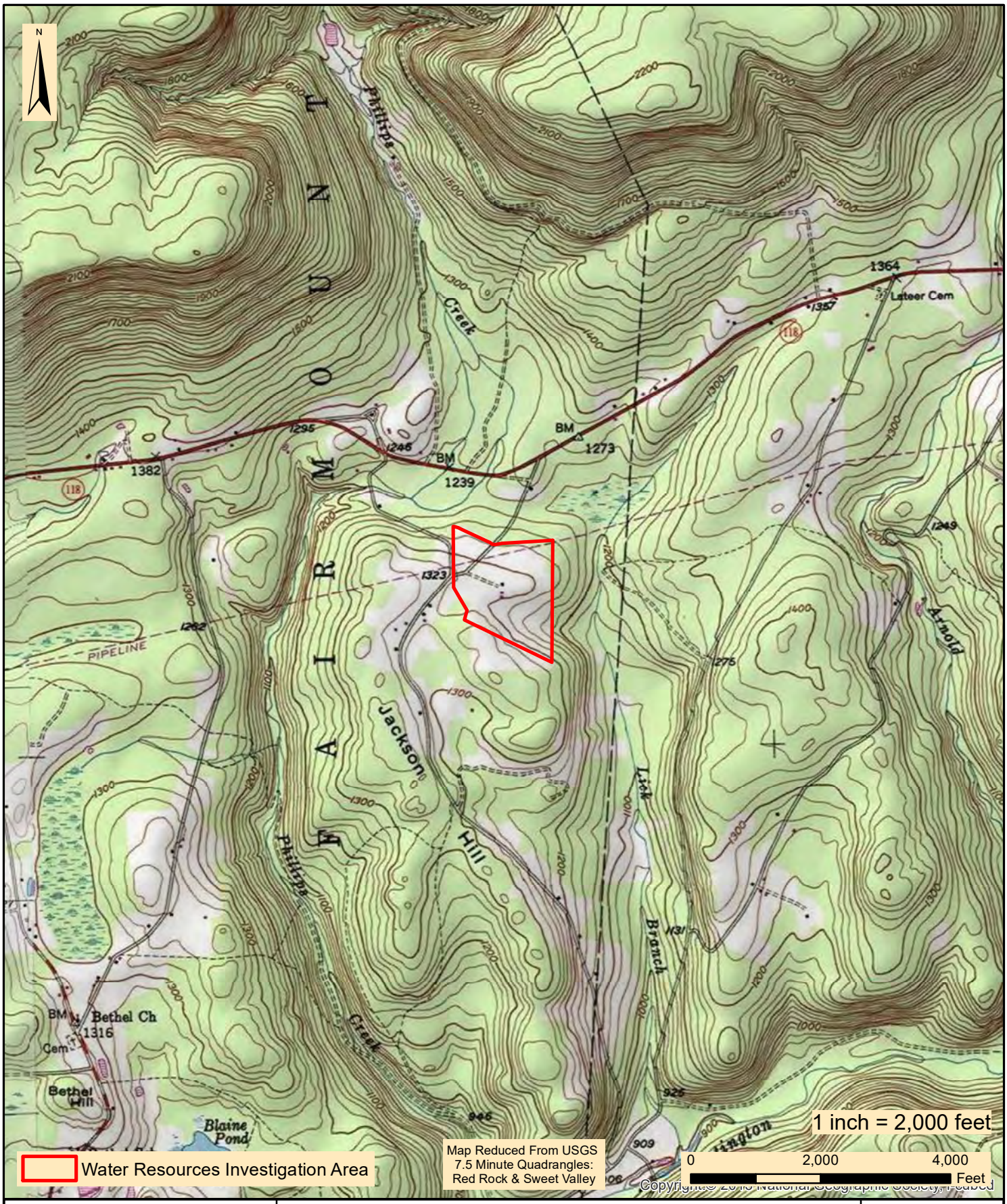
FIGURES

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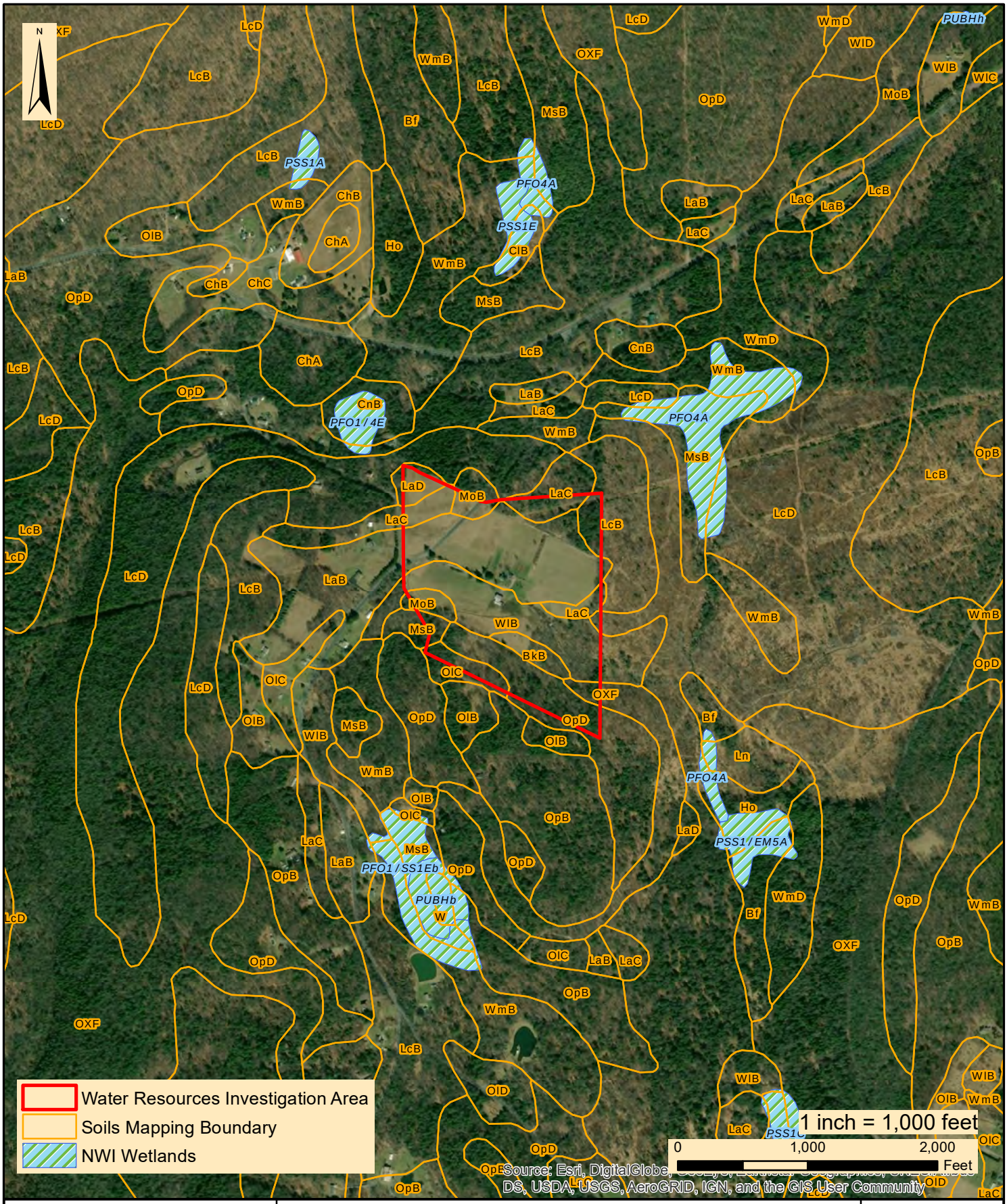
# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## COMPRESSOR STATION 607-A

## PROJECT LOCATION MAP

FAIRMOUNT TOWNSHIP LUZERNE COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 02/22/19 |
| WHM Drawing Number: | WILLIAMS204A001 |
| Drawn By: | JSJ |
| Figure Number: | 1 |





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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

## LEIDY SOUTH PROJECT
## COMPRESSOR STATION 607-A

## USDA-NRCS SOILS AND NWI WETLANDS MAP

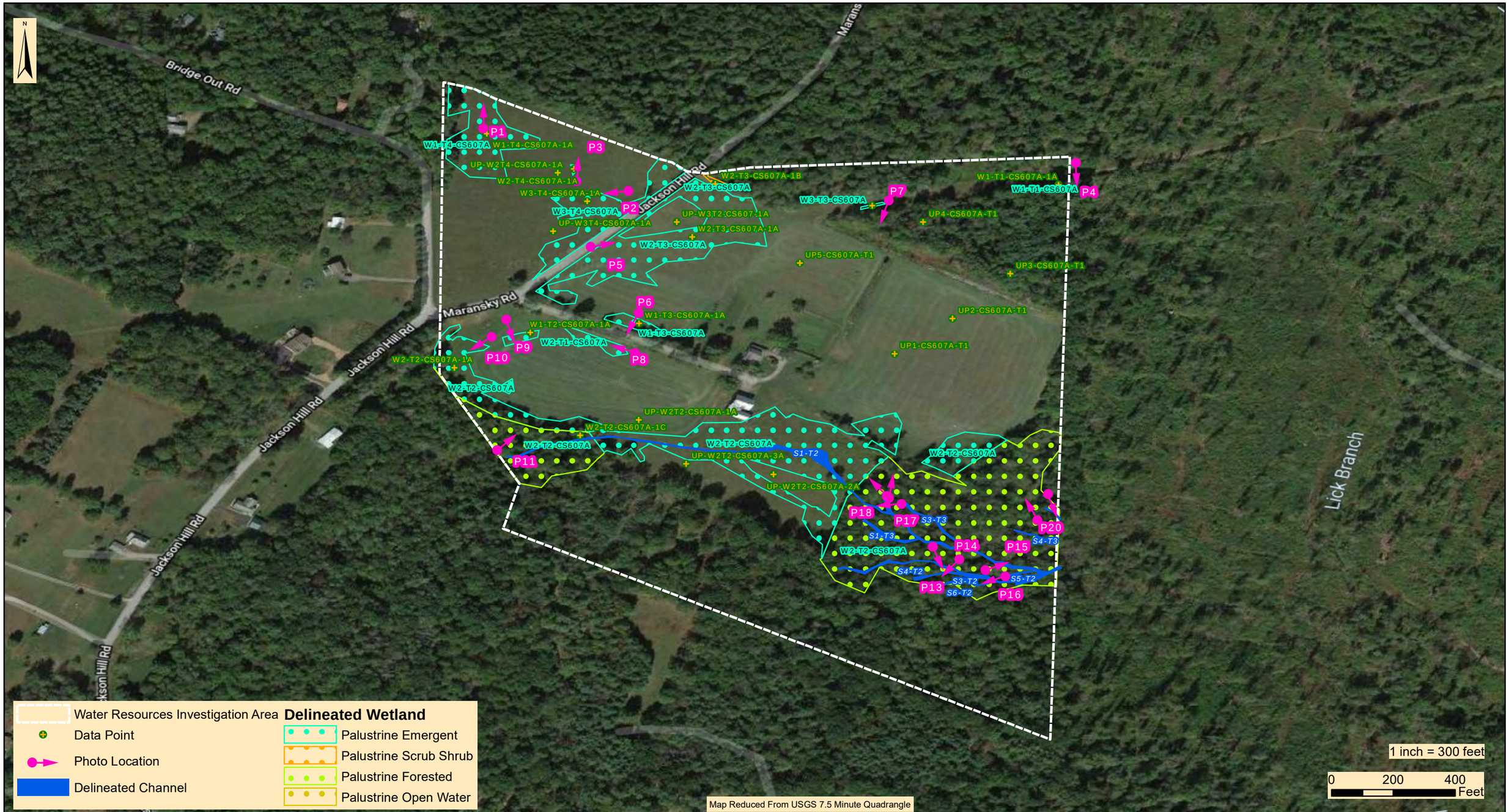
FAIRMOUNT TOWNSHIP LUZERNE COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 02/22/19 |
| WHM Drawing Number: | WILLIAMS204A002 |
| Drawn By: | JSJ |
| Figure Number: | 2 |

ATTACHMENT A

WETLAND AND WATER RESOURCE DELINEATION DATA PACKAGE

WATER RESOURCES DELINEATION MAP





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# TRANSCONTINENTAL GAS PIPE LINE COMAPNY, LLC

## LEIDY SOUTH PROJECT

## COMPRESSOR STATION 607-A

## WATER RESOURCES DELINEATION MAP

FAIRMOUNT TOWNSHIP | LUZERNE COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 07/03/19 |
| WHM DRAWING NUMBER: | WILLIAMS204A003 |
| Drawn By: | NJD |
| Figure Number: | 3 |

# PHOTOGRAPHIC DOCUMENTATION

**ID:** Photo 1

**Date:** 04/03/19

**Taken by:** JH

**Comments:**
The photo shows a view of wetland W1-T4-CS607A.

**ID:** Photo 2

**Date:** 04/03/19

**Taken by:** JH

**Comments:**
The photo shows a view of wetland W3-T4-CS607A.

**ID:** Photo 3

**Date:** 04/03/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 4

**Date:** 04/03/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 5

**Date:** 03/27/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 6

**Date:** 03/27/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 7

**Date:** 03/27/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 8

**Date:** 03/26/19

**Taken by:** DW

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**ID:** Photo 9

**Date:** 03/27/19

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**Date:** 03/27/19

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**Taken by:** DW

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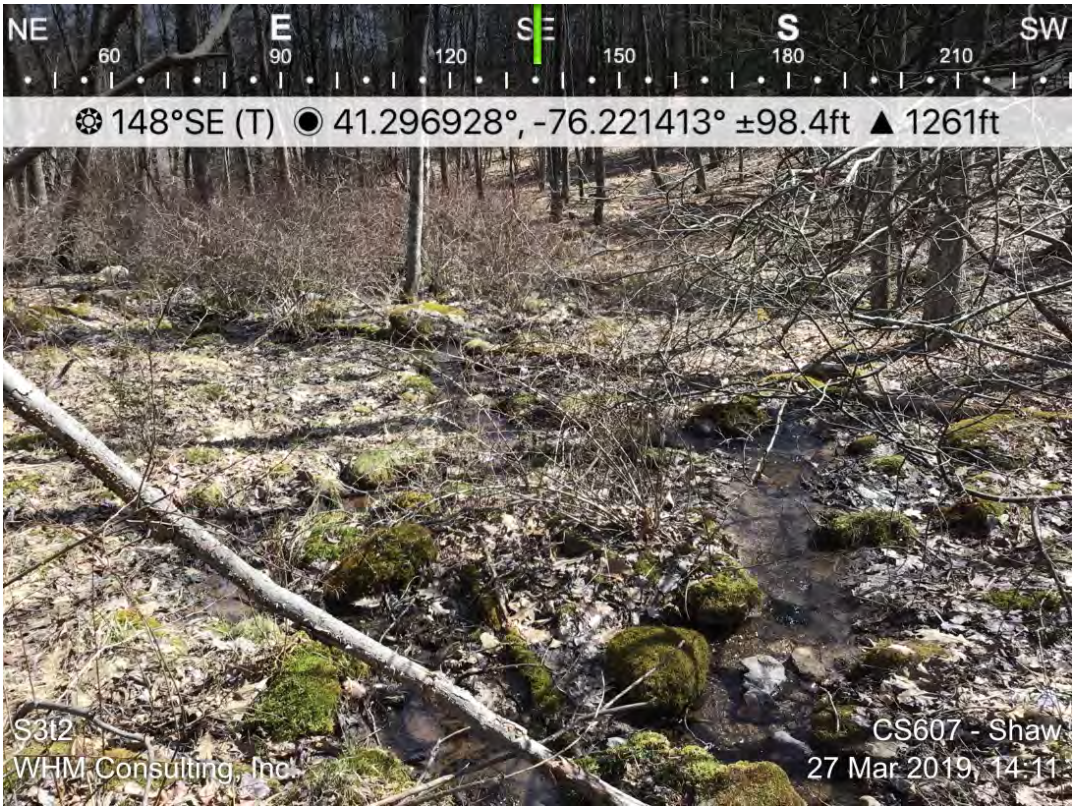


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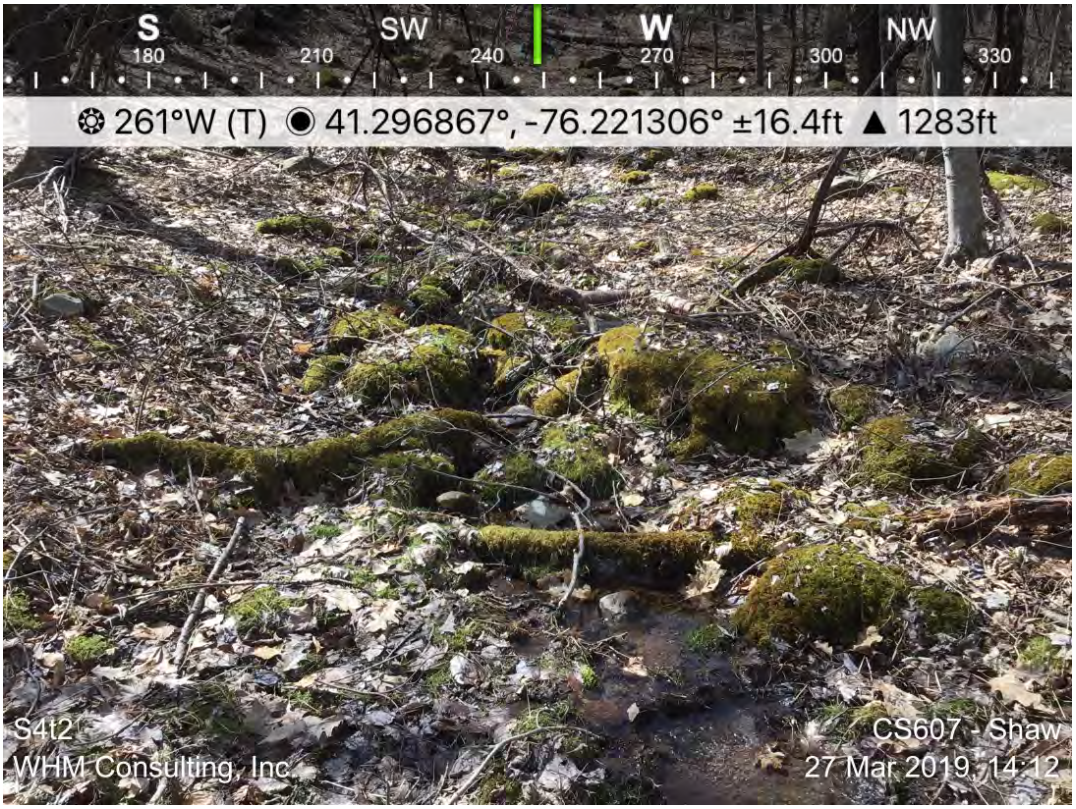


**ID:** Photo 14

**Date:** 03/27/19

**Taken by:** DW

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**ID:** Photo 15

**Date:** 03/27/19

**Taken by:** DW

**Comments:**
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**ID:** Photo 16

**Date:** 03/27/19

**Taken by:** DW

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**ID:** Photo 17

**Date:** 03/27/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 18

**Date:** 03/27/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 19

**Date:** 03/27/19

**Taken by:** JH

**Comments:**
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**ID:** Photo 20

**Date:** 03/27/19

**Taken by:** JH

**Comments:**
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# WETLAND, UPLAND, AND WATERWAYS DATA FORMS

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W1-T1-CS607A-1A

Investigator(s): DW, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.300257 Long.: -76.220326 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LcB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W1-T1-CS607-1A is located within a PEM wetland that is on the edge of a forested area.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 4"

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T1-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Tsuga canadensis* | 5 | Yes | FACU |
| 2 *Vacciniun corybosum* | 5 | Yes | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Osmundastrum cinnamomeum* | 15 | Yes | FACW |
| 2 *Rubus hispidus* | 10 | Yes | FACW |
| 3 *Spiraea alba* | 10 | Yes | FACW |
| 4 *Betula lenta* | 2 | No | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 37* = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)
*Sphagnum moss covered 60% of aerial coverage.

## SOIL

**Sampling Point:** W1-T1-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6" | 10YR 4/2 | 90 | 7.5 YR 5/6 | 10 | C | M | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal (frozen)

Depth (inches): 6"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T2-CS607A-1A

Investigator(s): DW, CC Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.298947 Long.: -76.225016 Datum: NAD 83

Soil Map Unit Name: Wellsboro channery silt loam (WIB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W1-T2-CS607A-1A is located within PEM wetland. The wetland is located in a field between wetlands W2-T2-CS607A and W2-T1-CS607A.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T2-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex lurida* | 60 | Yes | OBL |
| 2 *Poa trivialis* | 30 | Yes | FACW |
| 3 *Carex sp.* * | 15 | No | - |
| 4 *Juncus effusus* | 10 | No | OBL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 115 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T2-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 4/1 | 80 | 7.5YR 5/6 | 20 | C | M | clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: rock

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T3-CS607A-1A

Investigator(s): JH, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299025 Long.: -76.224049 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W1-T3-CS607A-1A is located within a PEM wetland in a field along an farm lane.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): ___ |
| Water table present? | Yes | X | No | ___ | Depth (inches): 10" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): ___ |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T3-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phleum pratense* | 25 | Yes | FACU |
| 2 *Carex lurida* | 20 | Yes | OBL |
| 3 *Carex vulpinoidea* | 15 | No | OBL |
| 4 *Juncus effusus* | 15 | No | FACW |
| 5 *Carex scoparia* | 15 | No | FACW |
| 6 | | | |
| 7 | | | |
| | 90 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 35 | x 1 = | 35 |
| FACW species | 30 | x 2 = | 60 |
| FAC species | | x 3 = | |
| FACU species | 25 | x 4 = | 100 |
| UPL species | | x 5 = | |
| Column totals | 90 (A) | | 195 (B) |

Prevalence Index = B/A = 2.17

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T3-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 95 | 7.5YR 4/6 | 5 | C | M | clay loam | |
| 8-12" | 10YR4/3 | 85 | 7.5YR 4/6 | 15 | C | M | clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T4-CS607A-1A

Investigator(s): DW, JH Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15 to 25%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.300398 Long.: -76.224627 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaD) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W1-T4-CS607A-1A is located within a PEM wetland located in a hayfield. Wheel ruts were observed in the wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T4-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 40 | Yes | OBL |
| 2 *Poaceae sp.* | 30 | Yes | - |
| 3 *Scirpus cyperinus* | 25 | Yes | FACW |
| 4 *Scirpus atrovirens* | 15 | No | OBL |
| 5 *Carex sp.* | 15 | No | - |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 125 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W1-T4-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 7.5YR 4/2 | 85 | 5YR 5/6 | 15 | C | M | silt loam | |
| 0-14" | 7.5YR 5/3 | 85 | 5YR 5/6 | 15 | C | M | gravelly silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point W2-T1-CS607A-1A

Investigator(s): DW, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): Hilltop Local relief (concave, convex, none): concave Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.298862 Long.: -76.224436 Datum: NAD 83

Soil Map Unit Name: Wellsboro channery silt loam (WIB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W2-T1-CS607A-1A is a depressional PEM wetland located on the side of an existing driveway.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 3" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T1-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Cornus amomum* | 5 | Yes | FACW |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus atrovirens* | 30 | Yes | OBL |
| 2 *Phleum pratense* | 30 | Yes | FACU |
| 3 *Juncus effusus* | 20 | Yes | FACW |
| 4 *Carex stricta* | 10 | No | OBL |
| 5 *Dichanthelium clandestinum* | 5 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 95 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T1-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 10YR 2/2 | 95 | 10YR 4/6 | 5 | | | Clay loam | |
| 7-14" | 10YR 4/4 | 100 | | | | | Clay loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T2-CS607A-1A

Investigator(s): DW, CC Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.298632 Long.: -76.225689 Datum: NAD 83

Soil Map Unit Name: Wellsboro channery silt loam (WIB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W2-T2-CS607-1A is located within the PEM portion of a PEM/PFO wetland complex that is located wihtin a field. S1-T2 flows throughout the wetland. Evidence of grazing was present within this portion wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): ___ |
| Water table present? | Yes | X | No | ___ | Depth (inches): 2" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T2-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 50 | Yes | OBL |
| 2 *Carex sp.* | 30 | Yes | - |
| 3 *Poa trivialis* | 20 | Yes | FACW |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T2-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/1 | 75 | 7.5YR 5/6 | 25 | C | M | clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: rock

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2T2-CS607A-1A

Investigator(s): DW, CC Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.298947 Long.: -76.225016 Datum: NAD 83

Soil Map Unit Name: Wellsboro channery silt loam (WIB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W2T2-CS607A-1A is located within an upland area just north of wetland W2-T2-CS607A in a hayfield.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2T2-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phleum pratense* | 60 | Yes | FACU |
| 2 *Dactylis glomerata* | 30 | Yes | FACU |
| 3 *Lolium perenne* | 20 | No | FACU |
| 4 Schizachyrium scoparium | 5 | No | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 115 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 115 | x 4 = | 460 |
| UPL species | | x 5 = | |
| Column totals | 115 (A) | | 460 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet) UP-W2T2-CS607A-1A was taken in a hayfield.

## SOIL

**Sampling Point:** UP-W2T2-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/3 | 100 | | | | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: rock

Depth (inches): 12"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2T2-CS607A-2A

Investigator(s): DW, CC Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.297686 Long.: -76.222856 Datum: NAD 83

Soil Map Unit Name: Wellsboro channery silt loam (WIB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W2T2-CS607A-2a is located within an upland area adjacent to W2-T2-CS607A.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2T2-CS607A-2A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Festuca rubra* | 60 | Yes | FACU |
| 2 *Potentillia pensylvanica* | 15 | Yes | FACU |
| 3 *Juncus effusus* | 5 | No | OBL |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 5 | x 1 = | 5 |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 75 | x 4 = | 300 |
| UPL species | | x 5 = | |
| Column totals | 80 (A) | | 305 (B) |

Prevalence Index = B/A = 3.81

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet) UP-W2T2-CS607A-2A was taken in a horse pasture.

## SOIL

**Sampling Point:** UP-W2T2-CS607A-2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 3/1 | 100 | | | | | silt loam | |
| 8-12" | 10YR 3/2 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: rock
Depth (inches): 12"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2T2-CS607A-3A

Investigator(s): DW, CC Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.297781 Long.: -76.223632 Datum: NAD 83

Soil Map Unit Name: Wellsboro channery silt loam (WIB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: UP-W2T2-CS607A-3a is located within an upland area adjacent to W2-T2-CS607A.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2T2-CS607A-3A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Festuca rubra* | 60 | Yes | FACU |
| 2 *Polytrichum sp.* | 20 | No | - |
| 3 *Schizachyrium scoparium* | 10 | No | FACU |
| 4 Fragaria virginiana | 10 | No | FACU |
| 5 *Carex sp.* | 10 | No | - |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 110 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 80 | x 4 = | 320 |
| UPL species | | x 5 = | |
| Column totals | 80 (A) | | 320 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet) UP-W2T2-CS607A-3A was taken in a horse pasture.

## SOIL

**Sampling Point:** UP-W2T2-CS607A-3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4" | 10YR 3/1 | 100 | | | | | silt loam | |
| 4-12" | 10YR 3/3 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: rock
Depth (inches): 12"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T2-CS607A-1C

Investigator(s): DW, CC Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.298034 Long.: -76.224574 Datum: NAD 83

Soil Map Unit Name: Morris channery silt loam (MoB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks:W2-T2-CS607A-1C is located in the western PFO portion of W2-T2-CS607A, a large PEM/PFO wetland complex. Channel S1-T2 flows throughout this portion of the wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | X | No | ___ | Depth (inches): 6" |
| Water table present? | Yes | ___ | No | X | Depth (inches): ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): surface |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T2-CS607A-1C

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Acer rubrum* | 80 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Vaccinium corymbosum* | 10 | Yes | FACW |
| 2 *Rosa multiflora* | 5 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 15 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Onoclea sensibilis* | 20 | Yes | FACW |
| 2 *Carex sp.* | 20 | Yes | - |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 60.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T2-CS607A-1C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 5/1 | 90 | 7.5YR 5/6 | 10 | C | M | clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T3-CS607A-1A

Investigator(s): JH, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299797 Long.: -76.223577 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W2-T3-CS607A-1A is located within wetland W2-T3-CS607A, a PEM/PSS wetland complex located within a hayfield above a pipeline ROW. Water conveys across pipeline and into PSS wetland.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 1-2"

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T3-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Scirpus atrovirens* | 25 | Yes | OBL |
| 2 *Scirpus cyperinus* | 25 | Yes | FACW |
| 3 *Juncus effusus* | 20 | Yes | FACW |
| 4 *Carex lurida* | 15 | No | OBL |
| 5 *Onoclea sensibilis* | 15 | No | FACW |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T3-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 4/2 | 90 | 7.5YR 4/6 | 10 | C | M | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2T3-CS607-1A

Investigator(s): JH, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299928 Long.: -76.223715 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation Y , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes ___ No X

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? Yes

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: UP-W3T2-CS607-1A is located within an upland area in the center of wetland W2-T3-CS607A. Area was recently disturbed by pipeline construction. Wetlands surround most of this area except within a portion of the recently disturbed pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2T3-CS607-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Lolium perenne* | 80 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 80* = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | | x 2 = | | |
| FAC species | | x 3 = | | |
| FACU species | 80 | x 4 = | 320 | |
| UPL species | | x 5 = | | |
| Column totals | 80 | (A) | 320 | (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)
* 20% of coverage comprised of rock and bare ground.

## SOIL

**Sampling Point:** UP-W2T3-CS607-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 4/2 | 80 | 7.5YR 4/6 | 20 | C | M | | soils were disturbed |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T3-CS607A-1B

Investigator(s): JH, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.300267 Long.: -76.223373 Datum: NAD 83

Soil Map Unit Name: Morris channery silt loam (MoB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes ___ No X

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? Yes<br>Hydric soil present? Yes<br>Wetland hydrology present? Yes | **Is the sampled area within a wetland?** Yes X No ___ |

Remarks: W2-T3-CS607A-1B is located within the PSS portion of wetland W2-T3-CS607, a PEM/PSS wetland complex located within a hayfield along a pipeline ROW. The PSS area recieves hydrology from the PEM portion of the wetland. Recent soil deposition.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes X | No ___ | Depth (inches): 6" | |
| Water table present? | Yes X | No ___ | Depth (inches): 0" | **Wetland hydrology present?** Yes X No ___ |
| Saturation present? (includes capillary fringe) | Yes X | No ___ | Depth (inches): 0" | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T3-CS607A-1B

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Rosa multiflora* | 40 | Yes | FACU |
| 2 *Salix discolor* | 20 | Yes | FACW |
| 3 *Berberis thunbergii* | 10 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 70 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 15 | Yes | FAC |
| 2 *Onoclea sensibilis* | 5 | No | FACW |
| 3 *Solidago rugosa* | 5 | No | FAC |
| 4 *Dichanthelium clandestinum* | 5 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 30 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 67.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T3-CS607A-1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR 3/1 | 100 | | | | | silt loam | rock refusal |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock refusal

Depth (inches): 3

**Hydric soil present?** Yes X No ___

Remarks: Soils were problematic due to recent construction.

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W2-T4-CS607A-1A

Investigator(s): DW, JH Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 8 to 15%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.300398 Long.: -76.224627 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W2-T4-CS607A-1A is located within wetland W2-T3-607A, a PEM wetland situated in a hayfield.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W2-T4-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 40 | Yes | OBL |
| 2 *Scirpus cyperinus* | 30 | Yes | FACW |
| 3 *Poa trivialis* | 20 | Yes | FACW |
| 4 *Carex sp.* | 15 | | - |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 105 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W2-T4-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 7.5YR 4/1 | 90 | 7.5YR 5/6 | 10 | C | M | clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W2T4-CS607A-1A

Investigator(s): DW, JH Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 8-15%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.300363 Long.: -76.224771 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W2T4-CS607A-1A is located within an upland area just west of wetland W2-T4-CS607A in a hayfield.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W2T4-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Poacaea sp.* | 60 | 60 | - |
| 2 *Plantago lanceolata* | 25 | 25 | UPL |
| 3 *Schizachyrium scoparium* | 25 | 25 | FACU |
| 4 Rubus hispidus | 10 | 10 | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | | x 1 = | | |
| FACW species | 10 | x 2 = | 20 | |
| FAC species | | x 3 = | | |
| FACU species | 25 | x 4 = | 100 | |
| UPL species | 25 | x 5 = | 125 | |
| Column totals | 60 | (A) | 245 | (B) |

Prevalence Index = B/A = 4.08

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet) UP-W2T4-CS607A-1A was taken in a hayfield.

## SOIL

**Sampling Point:** UP-W2T4-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 7.5YR 4/4 | 100 | | | | | gravelly silt loam | Rock refusal |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: rock

Depth (inches): 8"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/27/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T3-CS607A-1A

Investigator(s): JH, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): concave Slope (%): 0 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.300071 Long.: -76.22198 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaC) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W3-T3-CS607A-1A is located within wetland W3-T3-CS607A that is in an exsiting pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): ___ |
| Water table present? | Yes | X | No | ___ | Depth (inches): 5" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T3-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 50 | Yes | FAC |
| 2 *Scirpus atrovirens* | 25 | Yes | OBL |
| 3 *Carex scoparia* | 15 | No | FACW |
| 4 *Juncus tenuis* | 10 | No | FAC |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 100 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T3-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/2 | 80 | 7.5YR 4/6 | 20 | C | M | Rocky clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 8"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: UP-W3T4-CS607A-1A

Investigator(s): DW, JH Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0-8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299844 Long.: -76.224813 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP-W3T4-CS607A-1A is located within an upland area just west of wetland W3-T4-CS607A in a hayfield.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP-W3T4-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Sorghum bicolor* | 40 | Yes | UPL |
| 2 *Trifolium repens* | 30 | Yes | FACU |
| 3 *Dactylis glomerata* | 30 | Yes | FACU |
| 4 Plantago lanceolata | 15 | No | UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 115 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 60 | x 4 = | 240 |
| UPL species | 55 | x 5 = | 275 |
| Column totals | 115 (A) | | 515 (B) |

Prevalence Index = B/A = 4.48

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet) UP-W3T4-CS607A-1A was taken in a hayfield.

## SOIL

**Sampling Point:** UP-W3T4-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 7.5YR 4/3 | 100 | | | | | gravelly silt loam | soils were compacted |
| 8-14" | 7.5YR 4/4 | | | | | | gravelly silt loam | soils were compacted |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: rock
Depth (inches): 14"

**Hydric soil present?** Yes ___ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP1-CS607A-T1

Investigator(s): DW, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): convex Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.298758 Long.: -76.221782 Datum: NAD 83

Soil Map Unit Name: Lackawana channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP1-CS607A-T1 is located wihtin an upland area of a hayfield.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP1-CS607A-T1

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dactylis glmoerata* | 50 | Yes | FACU |
| 2 *Phleum pratense* | 50 | Yes | FACU |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 100 | x 4 = | 400 |
| UPL species | | x 5 = | |
| Column totals | 100 (A) | | 400 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP1-CS607A-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP2-CS607A-T1

Investigator(s): DW, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): convex Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299069 Long.: -76.221266 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP2-CS607A-T1 is located within an upland area of a hayfield

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP2-CS607A-T1

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phleum pratense* | 50 | Yes | FACU |
| 2 *Dactylis glomerata* | 30 | Yes | FACU |
| 3 *Schizachyrium scoparium* | 10 | Yes | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 90* = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 90 | x 4 = | 360 |
| UPL species | | x 5 = | |
| Column totals | 90 (A) | | 360 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP2-CS607A-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/4 | 100 | | | | | Silt loam | |
| 8-14" | 10YR 4/6 | 100 | | | | | Silt loam | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP3-CS607A-T1

Investigator(s): DW, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 0-8

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299468 Long.: -76.220755 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: UP3-CS607A-T1 is located in an upland area | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP3-CS607A-T1

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Pinus strobus* | 75 | Yes | FACU |
| 2 | *Tsuga canadensis* | 25 | Yes | FACU |
| 3 | *Acer rubrum* | 10 | No | FAC |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 110 | = | Total Cover |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | | = | Total Cover |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Lycopodium obscurum* | 40 | Yes | UPL |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 40 | = | Total Cover |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = | Total Cover |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 100 | x 4 = | 400 |
| UPL species | 40 | x 5 = | 200 |
| Column totals | 150 (A) | | 630 (B) |

Prevalence Index = B/A = 4.20

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP3-CS607A-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP4-CS607A-T1

Investigator(s): DW, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 3 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299928 Long.: -76.221528 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP4-CS607A-T1 is located within an upland forest situated between a field and an exsiting pipeline ROW.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP4-CS607A-T1

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Acer rubrum* | 30 | Yes | FAC |
| 2 | *Pinus strobus* | 20 | Yes | FACU |
| 3 | *Fraxinus americana* | 20 | Yes | FACU |
| 4 | *Populus grandidentata* | 10 | No | FACU |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 | = Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Tsuga canadensis* | 5 | Yes | FACU |
| 2 | *Vaccinium corymbosum* | 5 | Yes | FACW |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 10 | = Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Vaccinium angustifolium* | 20 | Yes | FACU |
| 2 | *Lycopodium clavatum* | 15 | Yes | FAC |
| 3 | *Lycopodium dendroideum* | 15 | Yes | FACU |
| 4 | *Mitchella repens* | 15 | Yes | FACU |
| 5 | *Poacaea sp.* | 10 | - | - |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 75 | = Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | | = Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 9 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | 5 | x 2 = | 10 |
| FAC species | 45 | x 3 = | 135 |
| FACU species | 105 | x 4 = | 420 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 155 (A) | | 565 (B) |

Prevalence Index = B/A = 3.65

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP4-CS607A-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 10YR 4/4 | 100 | | | | | gravelly silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10"

**Hydric soil present?** Yes X No ___

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 3/26/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP5-CS607A-T1

Investigator(s): DW, CG Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): convex Slope (%): 0-8

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.299561 Long.: -76.222624 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |

Remarks: UP5-CS607A-T1 is located within an upland area of a hayfield.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** UP5-CS607A-T1

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Phleum pratense* | 50 | Yes | FACU |
| 2 *Dactylis glomerata* | 40 | Yes | FACU |
| 3 *Schizachyrium scoparium* | 10 | No | FACU |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 100 | x 4 = | 400 |
| UPL species | | x 5 = | |
| Column totals | 100 (A) | | 400 (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** UP5-CS607A-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 3/3 | 100 | | | | | silt loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 607-A City/County: Luzerne County Sampling Date: 4/3/19

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W3-T4-CS607A-1A

Investigator(s): DW, JH Section, Township, Range: Fairmont Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0 to 8%

Subregion (LRR or MLRA): MLRA 140 Lat.: 41.300111 Long.: -76.224509 Datum: NAD 83

Soil Map Unit Name: Lackawanna channery silt loam (LaB) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: W3-T4-CS607A-1A is located within a PEM wetland situated in a field along an existing road.

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): surface

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W3-T4-CS607A-1A

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 40 | Yes | OBL |
| 2 *Scirpus cyperinus* | 25 | Yes | FACW |
| 3 *Theylypteris sp.* | 20 | No | FACW |
| 4 *Poacaea sp.* | 20 | No | - |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 105 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

x 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** W3-T4-CS607A-1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 7.5YR 4/2 | 85 | 7.5YR 5/6 | 15 | C | M, PL | clay loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

**STREAM ID:** S1-T2-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

County: Luzerne

Stream Name: ☑ UNNAMED ☐ NAMED:

Date: 3/27/19

Stream Type: ☑ STREAM ☐ DITCH/CANAL

Map No. :

Observers: DW/ CC

**CHARACTERISTICS**

Water Present: ☑ yes ☐ no

Flow Type: ☐ Perennial ☑ Intermittent ☐ Ephemeral

Stream Flow Direction: East

Width (ft) (water's edge to water's edge): 1-2'

Width (ft) (bank to bank): 1-2'
(above OHWM; use OHWM Criteria below)

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other Muck

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

Height (ft) (OHWM from stream bed):
*Direction when facing downstream

Evidence of Erosion: ☑ yes ☐ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☑ Other: impacted from a horse

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
red maple, eastern hemlock, red oak, white oak

Width of riparian corridor (ft): 0-150 ft

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☑ abrupt change in plant community
- ☐ other (list):

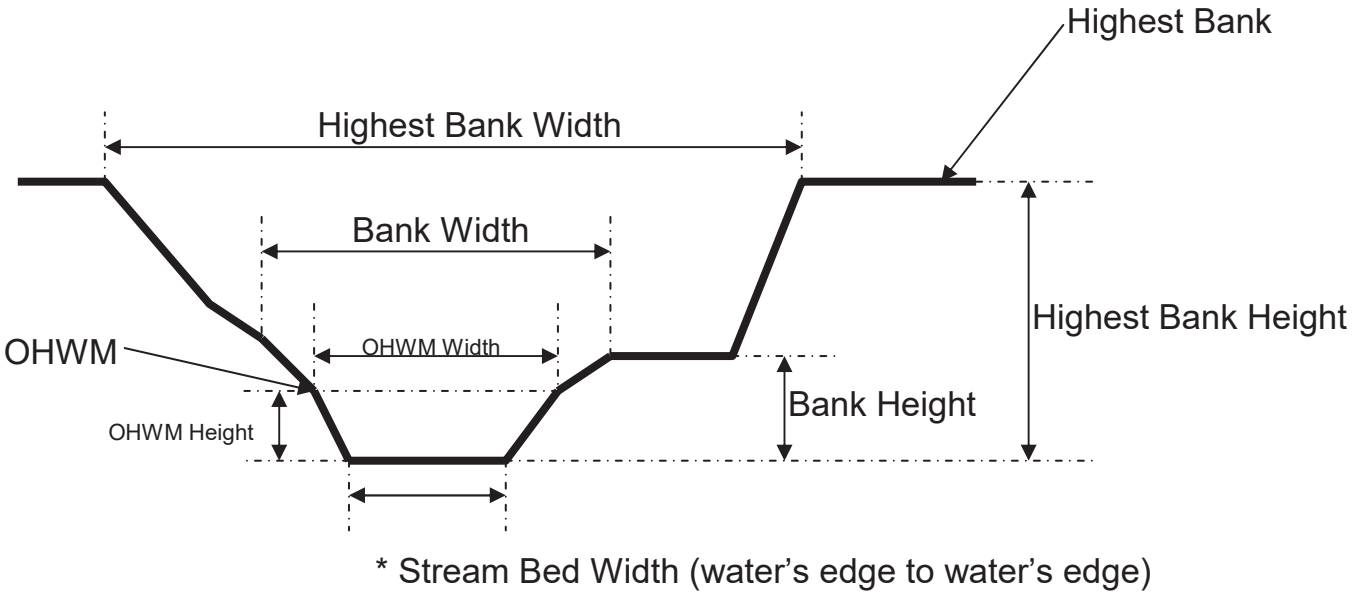
Discontinuous OHWM: ☐ yes ☑ no

Geometry: ☑ Meandering ☐ Relatively Straight

Presence of: ☑ run ☑ pools ☑ riffles
Explain:

Is the stream/tributary:
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

NOTES:
Culvert present on portion of stream
This channel begins in the forested portion of W2-T2 and flows throughout the wetland. It is hydrologically connected to S1-T3, S2-T3, S3-T3, S5-T2, and S3-T2.




*Stream bed width is variable

**DEFINITIONS:**

**Perennial:** has flowing water year-round during a typical year.

**Intermittent:** has flowing water during certain times of the year, when groundwater provides water for stream flow.

**Ephemeral:** has flowing water only during, and for a short duration after, precipitation events in a typical year.

**Run**: A reach of stream characterized by fast flowing low turbulence water.

**Riffle:** A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.

**Pool:** A reach of stream that is characterized by deep low velocity water and a smooth surface.

**STREAM ID: SS** S1-T3-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Luzerne

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 3/27/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, JH

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East

**Width (ft) (water's edge to water's edge):** 2'

**Width (ft) (bank to bank):** 3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1'

Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1'

Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Multiflora rose, Silky Dogwood, Rubus sp., Green Ash, Red Maple

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☑ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☑ pools ☑ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**

**STREAM ID:** S2-T2-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

| | |
|---|---|
| **County:** Luzerne | **Stream Name:** ☑ UNNAMED ☐ NAMED: |
| **Date:** 3/27/19 | **Stream Type:** ☑ STREAM ☐ DITCH/CANAL |
| **Map No. :** | **Observers:** DW, CC |

**CHARACTERISTICS**

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☐ Intermittent ☑ Ephemeral

**Stream Flow Direction:** East

**Width (ft) (water's edge to water's edge):** 1-2'

**Width (ft) (bank to bank):** 1-2'
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☑ Clay
- ☐ Concrete
- ☑ Other leaf matter

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft):

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft):

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☐ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
white oak, red oak, red maple, green ash, silky dogwood, multiflora rose, barberry

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☑ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☐ run ☐ pools ☐ riffles
**Explain:**

**Is the stream/tributary:**
☐ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Is hydrologically connected to wetland W2-T2-607A.

**STREAM ID: SS** S2-T3-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

County: Luzerne

Stream Name: ☑ UNNAMED ☐ NAMED:

Date: 3/27/2019

Stream Type: ☑ STREAM ☐ DITCH/CANAL

Map No. :

Observers: CG, JH

**CHARACTERISTICS**

Water Present: ☑ yes ☐ no

Flow Type: ☐ Perennial ☑ Intermittent ☐ Ephemeral

Stream Flow Direction: East

Width (ft) (water's edge to water's edge): 1'

Width (ft) (bank to bank): 3'
(above OHWM; use OHWM Criteria below)

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1'
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1'
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

Height (ft) (OHWM from stream bed):
*Direction when facing downstream

Evidence of Erosion: ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Multiflora rose, Rubus sp., Green Ash, Red Maple

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**
- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☑ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

Discontinuous OHWM: ☐ yes ☑ no

Geometry: ☐ Meandering ☑ Relatively Straight

Presence of: ☑ run ☐ pools ☑ riffles
Explain:

Is the stream/tributary:
- ☑ natural
- ☐ manmade – Explain:
- ☐ man-altered – Explain:

NOTES:

**STREAM ID:** S3-T2-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

| | |
|---|---|
| **County:** Luzerne | **Stream Name:** ☑ UNNAMED ☐ NAMED: |
| **Date:** 3/27/19 | **Stream Type:** ☑ STREAM ☐ DITCH/CANAL |
| **Map No. :** | **Observers:** DW, CC |

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East

**Width (ft) (water's edge to water's edge):** 2

**Width (ft) (bank to bank):** 2
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other muck and boulders

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

**Left Bank***
Height (ft): 1
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☐ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Channel has some small braids. Is hydrologically connected to wetland W2-T2-607A.

**STREAM ID: SS** S3-T3-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Luzerne

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 3/27/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, JH

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East

**Width (ft) (water's edge to water's edge):** 1'

**Width (ft) (bank to bank):** 3'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1'
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 1'
Slope:
- ☐ 0-30º (4:1)
- ☑ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Multiflora rose, Rubus sp., Ironwood, Green Ash, Moss

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☑ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
Explain:

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**

**STREAM ID:** S4-T2-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Luzerne

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 3/27/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW, CC

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East

**Width (ft) (water's edge to water's edge):** 2

**Width (ft) (bank to bank):** 2
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other muck and boulders

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☐ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**
white oak, red oak, red maple, green ash, silky dogwood, multiflora rose, barberry

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Channel has some small braids. Is hydrologically connected to wetland W2-T2-607A.

**STREAM ID:** S5-T2-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

| | |
|---|---|
| **County:** Luzerne | **Stream Name:** ☑ UNNAMED ☐ NAMED: |
| **Date:** 3/27/19 | **Stream Type:** ☑ STREAM ☐ DITCH/CANAL |
| **Map No. :** | **Observers:** DW/CC |

**CHARACTERISTICS**

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East

**Width (ft) (water's edge to water's edge):** 1

**Width (ft) (bank to bank):** 1
**(above OHWM; use OHWM Criteria below)**

**CHARACTERISTICS**

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other boulder

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

**BANK HEIGHT AND SLOPE**

| Left Bank* | Right Bank* |
|---|---|
| Height (ft): 1/2 | Height (ft): 1/2 |
| Slope: ☐ 0-30º (4:1) | Slope: ☐ 0-30º (4:1) |
| ☐ 31-45º (3:1) | ☐ 31-45º (3:1) |
| ☐ 46-60º (2:1) | ☐ 46-60º (2:1) |
| ☑ 61-90º (1:1) | ☑ 61-90º (1:1) |

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

**ASSOCIATED HABITAT**

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
white oak, red oak, red maple, green ash, silky dogwood, multiflora rose, barberry

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

**ASSOCIATED SPECIES**

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

**OHWM Criteria – Ordinary High Water Mark**

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**
Is hydrologically connected to wetland W2-T2-607A.

**STREAM ID:** S6-T2-CS607a

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Luzerne

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 3/27/19

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** DW,CC

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** East

**Width (ft) (water's edge to water's edge):** 1

**Width (ft) (bank to bank):** 1
**(above OHWM; use OHWM Criteria below)**

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☐ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☑ Other muck

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 1/2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Right Bank***
Height (ft): 1/2
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☐ 46-60º (2:1)
- ☑ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☐ yes ☑ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
**Width (ft) Highest Bank to Highest Bank:**

**Highest Left Bank Height*:**
**Highest Left Bank Slope*:**
**Highest Right Bank Height*:**
**Highest Right Bank Slope*:**
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
**If yes, list:**
white oak, red oak, red maple, green ash, silky dogwood, multiflora rose, barberry

**Width of riparian corridor (ft):**

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
**If yes, list :**

**Aquatic Vegetation**
☐ yes
☑ no
**If yes, list:**

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
**If yes, list:**

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
**If yes, list:**

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☐ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☑ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☐ Meandering ☑ Relatively Straight

**Presence of:** ☑ run ☐ pools ☑ riffles
**Explain:**

**Is the stream/tributary:**
- ☐ natural
- ☐ manmade – Explain:
- ☐ man-altered – Explain:

**NOTES:**
Is hydrologically connected to wetland W2-T2-607A.

# ATTACHMENT B

# WETLAND AND WATER RESOURCE SUMMARY TABLES

# WETLAND RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**LEIDY SOUTH PROJECT - COMPRESSOR STATION 607A**
**WETLAND RESOURCE SUMMARY TABLE**

| Wetland ID | Dataform ID | Cowardin Code | Resource Size | | | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Chapter 105.17 Wetland Designation | Watershed Information | | | Wetland Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | Watershed Name | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | |
| W1-T1-CS607A | W1-T1-CS607A-1A | PEM | 8 | 16 | 79 | No | ISOLATE | 41.300257 | -76.220326 | Other | Lick Branch | HQ-CWF, MF | - | Sphagnum moss was observed. |
| W2-T1-CS607A | W2-T1-CS607A-1A | PEM | 119 | 36 | 5,198 | No | ISOLATE | 41.298862 | -76.224436 | EV | Lick Branch | HQ-CWF, MF | - | A depressional wetland located along the side of an existing drive-way. |
| W1-T2-CS607A | W1-T2-CS607A-1A | PEM | 86 | 28 | 2,293 | No | ISOLATE | 41.298947 | -76.225016 | Other | Lick Branch | HQ-CWF, MF | - | Located in a field between wetlands W2-T2-CS607A and W2-T1-CS607A |
| W2-T2-CS607A | W2-T2-CS607A-1A | PEM | 448 | 102 | 33,049 | Yes | RPWWD | 41.298632 | -76.225689 | EV | Lick Branch | HQ-CWF, MF | - | A PEM/PFO wetland complex that is located wihtin a field. S1-T2 flows throughout the wetland. Evidence of grazing was present within the PEM portions of the wetland. |
| | W2-T2-CS607A-1C | PFO | 263 | 185 | 43,760 | Yes | RPWWD | 41.298034 | -76.224574 | | | | | |
| W1-T3-CS607A | W1-T3-CS607A-1A | PEM | 123 | 40 | 4,238 | No | ISOLATE | 41.299025 | -76.224094 | Other | Phillips Creek | HQ-CWF, MF | - | Located in a field along an existing farm road. |
| W2-T3-CS607A | W2-T3-CS607-1A | PEM | 96 | 464 | 69,952 | Yes | DELINEATE | 41.299797 | -76.223577 | EV | Phillips Creek | HQ-CWF,MF | - | Located in a hayfield along an existing road and above an existing pipeline ROW. Water conveys acorss the existing ROW into the PSS portion of the wetland. This wetland is hydrologically connected to wetland W3-T4-CS607A. |
| | W2-T3-CS607-1B | PSS | 30 | 25 | 980 | | DELINEATE | 41.300267 | -76.223373 | | | | | |
| W3-T3-CS607A | W3-T3-CS607A-1A | PEM | 12 | 58 | 436 | No | ISOLATE | 41.300071 | -76.221980 | Other | Lick Branch | HQ-CWF,MF | - | Located within an existing pipeline ROW. |
| W1-T4-CS607A | W1-T4-CS607A-1A | PEM | 198 | 200 | 37,317 | Yes | ISOLATE | 41.300710 | -76.225400 | Other | Phillips Creek | HQ-CWF, MF | - | Located within a hayfield. Wheel ruts were observed within the wetland. |
| W2-T4-CS607A | W2-T4-CS607A-1A | PEM | 15 | 31 | 371 | No | ISOLATE | 41.300398 | -76.224627 | Other | Phillips Creek | HQ-CWF, MF | - | Located within a hayfield. |
| W3-T4-CS607A | W3-T4-CS607A-1A | PEM | 200 | 148 | 30,735 | Yes | DELINEATE | 41.300111 | -76.224509 | Other | Phillips Creek | HQ-CWF, MF | - | Located within a hayfield along an existing road. This wetland is hydrologically connected to wetland W2-T3-CS607A. |
| | | | | | **Total PEM Wetlands** | 183,668 | | | | | | | | |
| | | | | | **Total PSS Wetlands** | 980 | | | | | | | | |
| | | | | | **Total PFO Wetlands** | 43,760 | | | | | | | | |
| | | | | | **TOTAL** | **228,408** | | | | | | | | |

# WATERCOURSE RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**LEIDY SOUTH PROJECT - COMPRESSOR STATION 607A**
**WATERCOURSE RESOURCE SUMMARY TABLE**

| Watercourse ID | Stream Name | Type | Resource Size | | | Floodway - FEMA & 50ft (ac) | FEMA Floodplain (ac) | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Watershed Name | PA Code Chapter 93 Water Quality | | PFBC Classification | | | Watercourse Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | | | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | Stocked Trout | Naturally Reproducing Trout | Class A Wild Trout | |
| S1-T2-CS607A | UNT to Lick Branch | Intermittent | 9,699 | 1.5 | 14,548 | 6.48 | - | Yes | RPW | 41.297606 | -76.222571 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | 0-6" deep. Impacted by horses. Culvert present, Starts at W2-T2-CS607A and flows through the wetland. Hydrologically connected to S1-T3, S2-T3, S3-T3, S5-T2, S3-T2(CS607A) |
| S2-T2-CS607A | UNT to Lick Branch | Ephemeral | 298 | 1 | 298 | | - | Yes | NRPW | 41.297342 | -76.220372 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | No water present at the time of survey. No erosion was noted. Hydrologically connected to W2-T2-CS607A |
| S3-T2-CS607A | UNT to Lick Branch | Intermittent | 2,849 | 2 | 5,697 | | - | Yes | RPW | 41.296816 | -76.221194 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | 0-6" water depth, No erosion noted. Channel braided. Hydrologically connected to W2-T2-CS607A |
| S4-T2-CS607A | UNT to Lick Branch | Intermittent | 484 | 2 | 968 | | - | No | RPW | 41.296791 | -76.221428 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | 0-6" water depth, No erosion noted. Channel braided. Hydrologicalled connected to W2-T2-607A |
| S5-T2-CS607A | UNT to Lick Branch | Intermittent | 597 | 1 | 597 | | - | No | RPW | 41.296805 | -76.220669 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | Hydrologically connected to wetland W2-T2-CS607A |
| S6-T2-CS607A | UNT to Lick Branch | Intermittent | 913 | 1 | 913 | | - | No | RPW | 41.29673 | -76.221132 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | Hydrologically connected to wetland W2-T2-CS607A |
| S1-T3-CS607A | UNT to Lick Branch | Intermittent | 515 | 3 | 1,544 | | - | No | RPW | 41.297157 | -76.221847 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | 0-6" water depth, No erosion noted. |
| S2-T3-CS607A | UNT to Lick Branch | Intermittent | 178 | 3 | 535 | | - | No | RPW | 41.297424 | -76.221854 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | 0-6" water depth, No erosion noted. |
| S3-T3-CS607A | UNT to Lick Branch | Intermittent | 582 | 3 | 1,745 | | - | No | RPW | 41.297275 | -76.22147 | Lick Branch | HQ-CWF, MF | - | N | Y | Y | 0-6" water depth, No erosion noted. |
| | | | | **Total Intermittent Channels** | 26,547 | | | | | | | | | | | | | |
| | | | | **Total Ephemeral Channels** | 298 | | | | | | | | | | | | | |
| | | | | **TOTAL** | 26,845 | | | | | | | | | | | | | |

ATTACHMENT C

PENNSYLVANIA LEVEL 2 RAPID ASSESSMENT REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

ATTACHMENT C

COMPRESSOR STATION 607A LEVEL 2 RAPID ASSESSMENT REPORT

FAIRMOUNT TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

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LEIDY SOUTH PROJECT

ATTACHMENT C

COMPRESSOR STATION 607A LEVEL 2 RAPID ASSESSMENT REPORT

FAIRMOUNT TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

## 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Williams) to conduct a Functional Assessment of wetland and water resources associated with the Leidy South Project – Compressor Station 607A Loop (Project) located in Fairmount Township, Luzerne County, Pennsylvania, on the Sweet Valley, Pennsylvania, USGS 7.5 Minute Quadrangle. The purpose of the Functional Assessment was to evaluate the condition of onsite aquatic resources that will be impacted as a result of the Project in order to meet the requirements as outlined in 25 Pa. Code Chapter 105 regulations. This report provides information on the methodology, data collected, field findings, and conclusions pertaining to the condition of wetland and water resources to be impacted. The Functional Assessment was conducted by WHM from March 2019 through August 2019.

## 2.0 METHODOLOGY

The Functional Assessment was conducted in accordance with the procedures and technical guidelines outlined in the Pennsylvania Department of Environmental Protection's (PADEP) Level 2 Rapid Assessment Protocols. A desktop analysis was conducted to determine assessment areas (AA) and zones of influence (ZOI). Field data was collected, and the desktop and field data were used in conjunction to arrive at the overall condition scores. The observations made represent the assessor's best professional judgement exercised with the guidance of the Rapid Assessment Protocols.

### 2.1 WETLAND CONDITION ASSESSMENT

The Functional Assessment of the onsite wetlands was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol* (Wetland Protocol). Aerial and satellite imagery combined with ArcGIS were utilized to determine the AA. The AA was determined based on the following criteria as outlined in the Wetland Protocol:

1. The AA is comprised of the entire wetland if the wetland is less than or equal to 1.0 acre in size.
2. If the wetland is larger than 1.0 acre in size and the impact area is less than 1.0 acre, the AA will be established around the impact area until the AA is 1.0 acre in size. In general, the AA will be a representative sampling of the entire wetland while still encompassing the impact area.
3. The AA is comprised of the entire wetland impact area if the proposed impact is greater than 1.0 acre in size.

Once the AA has been established, the wetland Zone of Influence (ZOI) is determined and is comprised of the land extending 300 ft. beyond the perimeter of the AA. The AA or ZOI is then assessed using the six condition indices outlined in Table 1. As noted in the table, two sub-indices are utilized to evaluate Vegetation Condition and Water Quality Stressors.

| Index | Assessment Method | Zone Assessed |
|---|---|---|
| Wetland ZOI Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Roadbed Presence Condition | Desktop Analysis of Aerial Imagery Field Observation | ZOI |
| Vegetation Condition | | |
| *Invasive Species Presence Sub-Index* | Field Observation | AA |
| *Vegetation Stressor Presence Sub-Index* | Field Observation | AA |
| Hydrologic Modification Stressor | Field Observation | AA |
| Sediment Stressor | Field Observation | AA |
| Water Quality Stressor | | |
| *Eutrophication Stressor Presence Sub-Index* | Field Observation | AA |
| *Contaminant/Toxicity Stressor Presence Sub-Index* | Field Observation | AA |

Table 1. Wetland Condition Indices.

According to the Wetland Protocol, the Wetland Condition Index Form (WCIF) and three supplemental worksheets (Roadbed Worksheet, Invasive Presence Worksheet, and Stressor Worksheet) are used to calculate the Overall Condition Index for the wetland being assessed. Using the WCIF, each of the six indices discussed in Table 1 are scored on a scale of 1 to 20, with 20 being the optimal condition. The Overall Condition Index is calculated by summing the six main indices and then dividing by 6. In general, the closer a score is to one, the better the condition the wetland is.

## 2.2 RIVERINE CONDITION ASSESSMENT

The Functional Assessment of onsite perennial and intermittent streams was conducted in accordance with the guidelines and procedures outlined in the *Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol* (Riverine Protocol). Aerial and satellite imagery and ArcGIS were utilized to determine the upper and lower boundaries of the AA. The boundaries of the AA were determined based on all or some of the following criteria as outlined in the Riverine Protocol:

1. The upstream influence of backwater projected as part of the hydrologic and hydraulic (H&H) analysis and application of the same distance downstream; or
2. 20 times the channel width at bankfull stage upstream and downstream; or
3. 100 feet upstream and downstream of the proposed location, whichever is greater.

Once the upper and lower boundaries of the AA were established, the Riparian Vegetation and Riparian ZOI were established. The Riparian Vegetation Areas was established using the following the criteria as outlined in the Riverine Protocol. The following criteria are listed in order of the method that is preferred by PADEP:

1. Hydrologic modeling analysis to determine the 100-year storm event; or
2. 100-year Federal Emergency Management Agency (FEMA) floodplain mapping; or
3. In FEMA unmapped areas, the flood prone area width is estimated by determining the elevation that corresponds to twice the maximum depth of the bankfull channel as taken from the established bankfull stage; or
4. In FEMA unmapped areas where hydrologic modeling analysis and stream cross-section data is not available, estimate the flood prone area width by extending 100 feet from the stream bank towards the valley margins. Best professional judgement is to be utilized by the assessor if one or more of the valley margins are less than 100 feet from the bank and adjust boundaries.

In areas where a mapped FEMA floodplain was available, ArcGIS was used to determine the boundary. In all instances, best professional judgement was used to define the Riparian Vegetation areas in accordance with the criteria provided above.

Once the Riparian Vegetation Areas were established, Riparian ZOI boundaries were determined by extending 100 feet landward from the Riparian Vegetation Area boundaries on each side of the stream and along the entire length of the Riparian Vegetation Area. If assessing the uppermost headwaters of a watercourse, the area 100 feet above the watercourse may be included in the Riparian Zone boundary.

In accordance with the Riverine Protocol, the Riparian ZOI is not evaluated as part of the condition assessment for perennial streams with a drainage area greater than 100 square miles or less than 2,000 square miles. Likewise, the Instream Habitat condition will not be evaluated for intermittent streams. Neither of the aforementioned indices will be included in the assessment when evaluating those stream types unless deemed necessary by PADEP.

Once the AA and ZOI have been determined, the riverine condition is assessed using the five condition indices outlined in Table 2. As noted in the table, not all indices are used to determine the overall condition of the channel being evaluated, unless deemed necessary by PADEP.

| Index | Watercourse Classification | | | Assessment Method | Zone Assessed |
|---|---|---|---|---|---|
| | Intermittent | Perennial (Drainage area ≤ 100 sq. miles) | Perennial (Drainage area >100 sq. miles but ≤ 2,000 sq. miles ) | | |
| Channel/Floodplain Condition | Yes | Yes | Yes | Field Observations | AA |
| Riparian Vegetation Condition | Yes | Yes | Yes | Desktop Analysis of Aerial Imagery<br>Field Observations | AA<br>Riparian Vegetation Area |
| Riparian Zone of Influence Condition | Yes | Yes | No | Desktop Analysis of Aerial Imagery<br>Field Observations | Riparian ZOI |
| Instream Habitat Condition | No | Yes | Yes | Field Observations | AA |
| Channel Alteration Condition | Yes | Yes | Yes | Field Observations | AA |

Table 2. Indices to be determined based on watercourse classification.

According to the Riverine Protocol, the Riverine Assessment Form 1 (RAF1) is to be used to calculate the Riverine Condition Index for the stream being assessed. Using RAF1, each of the six indices discussed in Table 2 are scored on a scale of 1 to 20, with 20 being the optimal condition. When calculating the Riparian Vegetation Condition Index and the Riparian ZOI Condition Index, the left and right sides are scored, summed together, and then divided by 2 for the overall score for each.

The indices evaluated in Table 2 are weighted equally when calculating the final score for the Riverine Condition Index (RCI). Therefore, to calculate RCI, each index score is added together and then divided by the number of indices evaluated. For example, when calculating RCI for an intermittent stream, the scores for the four indices assessed would be added together and divided by 4. In general, the closer the score is to 1, the better the condition of the stream being assessed.

## 3.0 RESULTS

Four (4) wetlands were evaluated during the assessment. No streams were assessed, because no streams are being impacted. Attachment A- Assessment Forms includes data collected for the wetlands and watercourses at the site. Attachment B - Figures includes mapping of the resources evaluated during the assessment and their respective AA and ZOI boundaries. The following provides a descriptive summary of the data collected during the Functional Assessment.

### 3.1 WETLANDS

Overall four (4) wetlands were assessed for the purposes of the Functional Assessment. Due to proximity, wetlands were combined as applicable, which resulted in a total of two (2) assessment areas. In general, the wetland ZOIs were comprised of forests, agricultural fields, driveways, an existing pipeline, and other stream and wetland features.

| Leidy South - Compressor Station 607A Project - Wetland Condition Assessment Summary Table | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Assessment Area Number | Wetland ID | Assessment Area (Acres) | ZOI Condition Index | Roadbed Presence Index | Vegetation Condition Index | Hydrologic Modification Index | Sediment Stressor Index | Water Quality Stressor Index | Overall Condition Index |
| 1 | W2-T3-CS607A, W2-T2-CS607A, & W2-T1-CS607A | 1.00 | 0.55 | 0.18 | 0.50 | 0.90 | 0.95 | 1.00 | 0.68 |
| 2 | W3-T3-CS607A | 0.10 | 0.68 | 0.85 | 0.43 | 0.85 | 0.95 | 1.00 | 0.79 |

Table 3 – Wetland Condition Assessment Summary Table

Functional assessments resulted in Overall Condition Index scores ranged from 0.68 to 0.79 for the two (2) wetland functional assessments. See Attachment A (Assessment Forms) and Attachment B (Figures) for more detail.

### 3.2 STREAMS

No streams were proposed to be impacted by the Project, so no stream assessments were completed.

## 4.0 CONCLUSIONS

Four (4) wetlands were evaluated during the Functional Assessment. Because some of the wetlands were located within the same area and possessed similar characteristics and habitat, they were grouped together in one assessment area. This resulted in two (2) wetland functional assessments being completed. The Overall Condition Index for wetlands ranged from 0.68 to 0.79, indicating that wetlands for the project were of marginal to high quality.

## 5.0 REFERENCES


1. Pennsylvania Code. 2017. http://www.pacode.com/secure/data/025/025toc.html.

2. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-003.

3. Pennsylvania Department of Environmental Protection (PADEP). 2017. Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocol. Version 2.0. Document Number 310-2137-002.

4. United States Geological Survey (USGS). Topographic Quadrangle 7.5 minute Series, Sweet Valley, PA.

# ATTACHMENT A

# ASSESSMENT FORMS

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| Williams-18-204 | Leidy South - Compressor Station 607A | 8/6/2019 | 0.03 | 1 | 1.00 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Charly Bloom | 41.299797, 41.2986, 41.298862 | -76.2235, -76.225689, -76.224436 | W2-T3-CS607A, W2-T2-CS607A, W2-T1-CS607A |

**General Comments:**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | Optimal | Optimal | Suboptimal | Marginal | Poor | | Total Score: | |
|---|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 9% | 32% | 2% | 51% | 6% | 0% | | |
| | Score: | 19 | 17 | 13 | 7 | 1 | 0 | | |
| | Total Sub-score: | 1.71 | 5.44 | 0.26 | 3.57 | 0.06 | 0.00 | 11.04 | 0.55 |

**Comments:**

**2. Roadbed Presence Index**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | Condition Categories | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. | CI = Total Score/20 |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

| | Condition Score | Weighting | Sub-Scores | |
|---|---|---|---|---|
| a. Roadbed 0-100: | 3 | * (0.67) | 2 | |
| b. Roadbed 100-300: | 5 | * (0.33) | 2 | 0.18 |
| | | Total Score: | 4 | |

**Comments:**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| a. Invasive Species Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments: W2-T3-CS607A -** mivi (15%), romu (40%), beth (10%) **W2-T2-CS607A** - romu (5%), potr (20%) **W2-T1-CS607A -** N/A

| | Condition Category | | | | |
|---|---|---|---|---|---|
| b. Vegetation Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 6 | **Total Score** | **0.50** |
| **b. Vegetation Sub-Score:** | 14 | **20** | |

**4. Hydrologic Modification Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Hydrologic Modification Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **18** | **0.90** |

**5. Sediment Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| Sediment Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/20** |
| | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | |
|---|---|---|
| **Score:** | **19** | **0.95** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| a. Eutro-phication Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** |
| | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| b. Contaminant / Toxicity Stressor Presence | **Optimal** | **Suboptimal** | **Marginal** | **Poor** | **CI = Total Score/40** |
| | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. | |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **1.00** |
| **b. Contaminant Score** | 20 | **40** | |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.68** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Leidy South - Compressor 607A | | | 8/6/2019 | Charly Bloom |
| **Resource Identifier** | **AA #** | **Lat (dd)** | **Long (dd)** | **Notes:** |
| W2-T3-CS607A, W2-T2-CS607A, W2-T1-CS607A | 1 | 41.299797, 41.298600, 41.298862 | -76.2235, -76.225689, -76.224436 | |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | 1 | 2 | 2 | 100-300 ft. | 2 | 2 | 4 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | 1 | 1 | 1 | 100-300 ft. | 1 | 1 | 1 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | | 1, 2 or 4 | | 100-300 ft. | | 1, 2 or 4 | |
| Total Scores: | 0-100 ft. | 3 | | | 100-300 ft. | 5 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

2/4/2017

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | X | | |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

| Project # | Project Name | Date | Proposed Impact Size (acres) | AA # | AA Size (acres) |
|---|---|---|---|---|---|
| William-18-204 | Leidy South - Compressor Station 607A | 8/6/2019 | 0.01 | 2 | .01 |

| Name(s) of Evaluator(s) | Lat (dd) | Long (dd) | Notes: |
|---|---|---|---|
| Charly Bloom | 41.300071 | -76.221980 | W3-T3-CS607A |

**General Comments:**

**1. Wetland Zone of Influence Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| Wetland Zone of Influence (300 foot area around AA perimeter) | ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. | **High Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.<br>**Low Suboptimal:** ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. | **High Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.<br>**Low Marginal:** ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory. | **High Poor:** ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.<br>**Low Poor:** ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

**Total Score = SUM(%Areas*Scores)**

| | Condition Category: | Optimal | Suboptimal | Marginal | | | | Total Score: | CI = Total Score/20 |
|---|---|---|---|---|---|---|---|---|---|
| Scoring: | % ZOI Area: | 64% | 2% | 34% | | | | | |
| | Score: | 17 | 12 | 7 | | | | | |
| | Total Sub-score: | 10.88 | 0.24 | 2.38 | 0.00 | 0.00 | 0.00 | 13.50 | 0.68 |

**Comments:**

**2. Roadbed Presence Index**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Categories | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance) | **High Optimal:** No roadbeds present within 100 - 300 feet of the AA boundary<br>**Low Optimal:** Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2. | **High Suboptimal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 2 but equal to or less than 4.<br>**Low Suboptimal:** Roadbed presence score within 100 - 300 feet AA boundary is greater than to 4 but less than or equal to 6. | **High Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 6 but less than or equal to 8.<br>**Low Marginal:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 8 but less than or equal to 10. | **High Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than to 10 but less than or equal to 12.<br>**Low Poor:** Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

| | Condition Score | Weighting | Sub-Scores | CI = Total Score/20 |
|---|---|---|---|---|
| **a. Roadbed 0-100:** | 17 | * (0.67) | 11 | |
| **b. Roadbed 100-300:** | 17 | * (0.33) | 6 | |
| | | **Total Score:** | **17** | **0.85** |

**Comments:**

# Wetland Condition Assessment Form

**Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)**

**Pennsylvania Department of Environmental Protection**

**For use in all wetland classifications found within Pennsyvlania except those found within the banks of a watercourse.**

**3. Vegetation Condition Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Invasive Species Presence | **High Optimal:** No invasives present. **Low Optimal:** <5% of the total AA contains invasive species. | **High Suboptimal:** >5% but less than 10% of the total AA contains invasive species. **Low Suboptimal:** >10% but less than 20% of the total AA contains invasive species. | **High Marginal:** >20% but less than 30% of the total AA contains invasive species. **Low Marginal:** >30% but less than 50% of the total AA contains invasive species. | > 50% of the total AA contains invasive species. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:** mivi, Japanese Stiltgrass (*Microstegium vimineum* ) (FAC) 50%

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Vegetation Stressor Presence | **High Optimal:** No vegetation stressors present within the AA boundary. **Low Optimal:** One vegetation stressor present within the AA boundary. | **High Suboptimal:** Two vegetation stressors present within the AA boundary. **Low Suboptimal:** Three vegetation stressors present within the AA boundary. | **High Marginal:** Four vegetation stressors present within the AA boundary. **Low Marginal:** Five vegetation stressors present within the AA boundary. | Greater than five vegetation stressors present within the AA boundary. | **CI = Total Score/40** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Invasive Sub-Score:** | 3 | **Total Score** | **0.43** |
| **b. Vegetation Sub-Score:** | 14 | **17** | |

**4. Hydrologic Modification Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Hydrologic Modification Stressor Presence | **High Optimal:** No hydrologic stressors present within the AA boundary. **Low Optimal:** One hydrologic stressor present within the AA boundary. | **High Suboptimal:** Two hydrologic stressors present within the AA boundary. **Low Suboptimal:** Three hydrologic stressors present within the AA boundary. | **High Marginal:** Four hydrologic stressors present within the AA boundary. **Low Marginal:** Five hydrologic stressors present within the AA boundary. | Greater than five hydrologic stressors present within the AA boundary. | **CI = Total Score/20** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **0.85** |

**Comments:**

| | |
|---|---|
| **Score:** | **17** |

**5. Sediment Stressor Index**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| Sediment Stressor Presence | **High Optimal:** No sediment stressors present within the AA boundary. **Low Optimal:** One sediment stressor present within the AA boundary. | **High Suboptimal:** Two sediment stressors present within the AA boundary. **Low Suboptimal:** Three sediment stressors present within the AA boundary. | **High Marginal:** Four sediment stressors present within the AA boundary. **Low Marginal:** Five sediment stressors present within the AA boundary. | Greater than five sediment stressors present within the AA boundary. | **CI = Total Score/20** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | **0.95** |

**Comments:**

| | |
|---|---|
| **Score:** | **19** |

**6. Water Quality Stressor Index**

| | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| a. Eutro-phication Stressor Presence | No eutrophication stressors present within the AA boundary. | One eutrophication stressors present within the AA boundary. | Two eutrophication stressors present within the AA boundary. | Three eutrophication stressors present within the AA boundary. |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 |

**Comments:**

| | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| b. Contaminant / Toxicity Stressor Presence | No contaminant / toxicity stressors present within the AA boundary. | One contaminant / toxicitystressors present within the AA boundary. | Two contaminant / toxicity stressors present within the AA boundary. | Three contaminant / toxicity stressors present within the AA boundary. | **CI = Total Score/40** |
| **SCORE** | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 | |

**Comments:**

| | | | |
|---|---|---|---|
| **a. Eutrophication Score** | 20 | **Total Score:** | **1.00** |
| **b. Contaminant Score** | 20 | **40** | |

| | | |
|---|---|---|
| **Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.** | **Overall Condition Index:** | **0.79** |

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## Roadbed Worksheet

| Project Name / Identifier | | | Date | Name(s) of Evaluator(s) |
|---|---|---|---|---|
| Leidy South - Compressor Station 607A | | | 8/6/2019 | Charly Bloom |
| Resource Identifier | AA # | Lat (dd) | Long (dd) | Notes: |
| | | 41.300071 | -76.221980 | W3-T3CS607A |

**Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.**

| Roadbed Type | Distance | Occurrences | Weighting Factor | Score | Distance | Occurrences | Weighting Factor | Score |
|---|---|---|---|---|---|---|---|---|
| ≥ 4 Lane Paved | 0-100 ft. | | 4 | 0 | 100-300 ft. | | 4 | 0 |
| 2 Lane Paved | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| 1 Lane Paved | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Gravel Road | 0-100 ft. | | 1 | 0 | 100-300 ft. | | 1 | 0 |
| Dirt Road | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Railroad | 0-100 ft. | | 2 | 0 | 100-300 ft. | | 2 | 0 |
| Other Roadbeds | 0-100 ft. | 1 | 1, 2 or 4 | 1 | 100-300 ft. | 1 | 1, 2 or 4 | 1 |
| Total Scores: | 0-100 ft. | 1 | | | 100-300 ft. | 1 | | |

**Road Comments:**

# Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

## STRESSOR WORKSHEET

2/4/2017

| | Occurrence in AA | | |
|---|---|---|---|
| | Y | #'s | N |
| **Vegetation Alteration** | | | |
| Mowing | X | | X |
| Moderate livestock grazing (within one year) | | | X |
| Crops (annual row crops, within one year) | | | X |
| Selective tree harvesting/cutting (>50% removal, within 5 years) | | | X |
| Right-of-way clearing (mechanical or chemical) | X | 1 | |
| Clear cutting or Brush cutting (mechanized removal of shrubs and saplings) | | | X |
| Removal of woody debris | | | X |
| Aquatic weed control (mechanical or herbicide) | | | X |
| Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.) | | | X |
| Plantation (conversion from typical natural tree species, including orchards) | | | X |
| Other: | | | X |
| **Total Number:** | **2** | | |
| **Hydrologic Modification** | | | |
| Ditching, tile draining, or other dewatering methods | | | X |
| Dike/weir/dam | | | X |
| Filling/grading | | | X |
| Dredging/excavation | | | X |
| Stormwater inputs (culvert or similar concentrated urban runoff) | | | X |
| Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks) | X | | |
| ***Dead or dying trees (trunks still standing)**** | | | X |
| Stream alteration (channelization or incision) | | | X |
| Other: | | | X |
| **Total Number:** | **1** | | |
| **Sedimentation** | | | |
| Sediment deposits/plumes | | | X |
| Eroding banks/slopes | | | X |
| Active construction (earth disturbance for development) | | | X |
| Active plowing (plowing for crop planting in past year) | | | X |
| Intensive livestock grazing (in one year, ground is >50% bare) | | | X |
| Active selective forestry harvesting (within one year) | | | X |
| Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.) | | | X |
| Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges) | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Eutrophication** | | | |
| Direct discharges from agricultural feedlots, manure pits, etc. | | | X |
| Direct discharges from septic or sewage treatment plants, fish hatcheries, etc. | | | X |
| Heavy or moderately heavy formation of algal mats | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |
| **Contaminant/Toxicity** | | | |
| Severe vegetation stress (source unknown or suspected) | | | X |
| Obvious spills, discharges, plumes, odors, etc. | | | X |
| Acidic drainages (mined sites, quarries, road cuts) | | | X |
| Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites | | | X |
| Chemical defoliation (majority of herbaceous and woody plants affected, within one year) | | | X |
| Fish or wildlife kills or obvious disease or abnormalities observed | | | X |
| Excessive garbage/dumping | | | X |
| Other: | | | X |
| **Total Number:** | **0** | | |

**** Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.***

**Pennsylvania Wetland Condition Level 2 Rapid Assessment**
(Document No. 310-2137-002)
Pennsylvania Department of Environmental Protection

**Invasive Species Presence Worksheet**

**Are invasive species (from list) present at the site in any layer? YES NO**

**If listed species present, enter the percent areal coverage for each species below:**

| *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% | *Species Code* | <5% | ≥ 5-20% | ≥ 20 - 50% | ≥ 50% |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total % relative cover of all invasives, collectively on site: _____%**

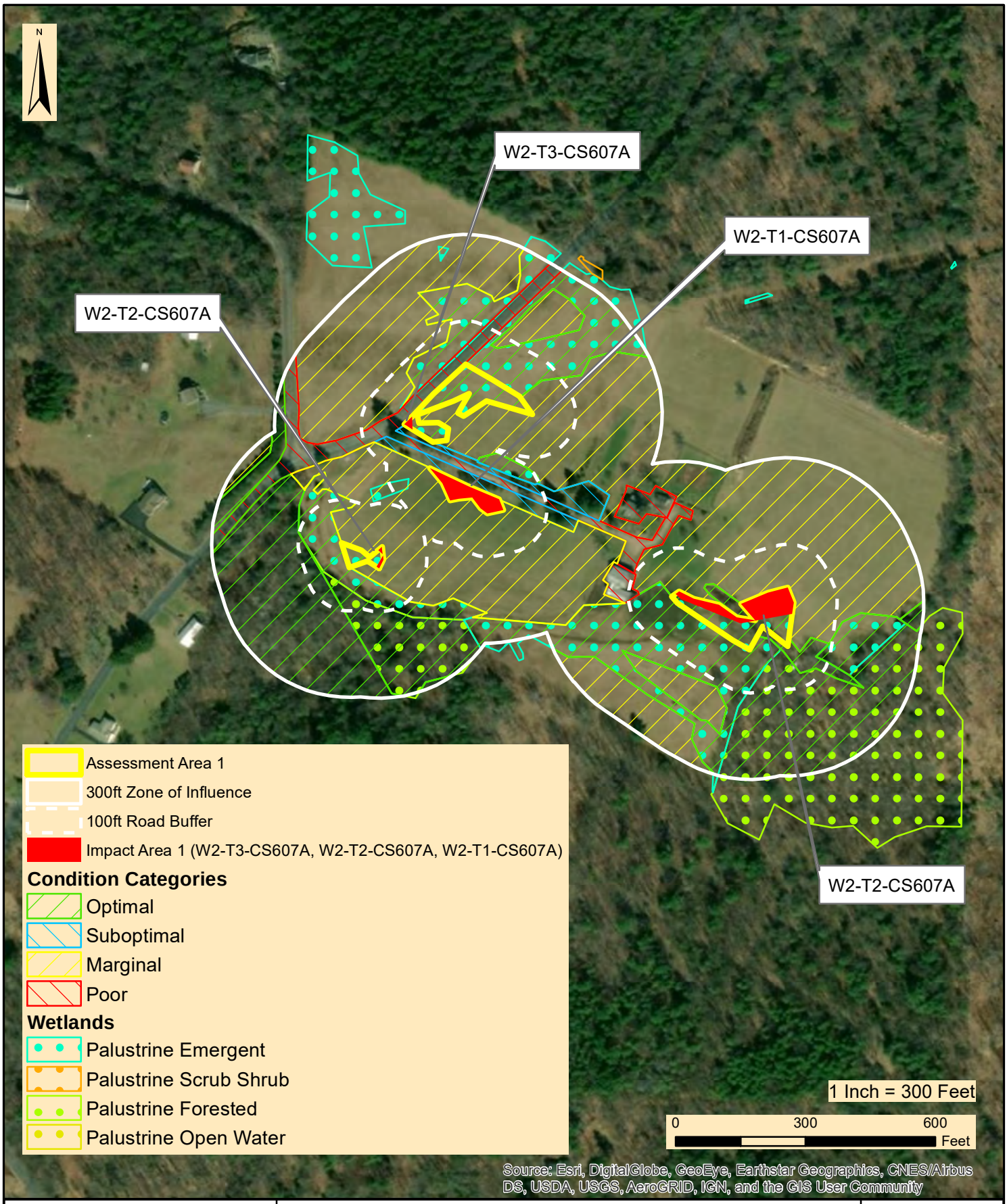
**Comments:**

**Common Invasives/Aggressives List**

| Code | Common Name | *Scientific* | Status | Code | Common Name | *Scientific* | Status |
|---|---|---|---|---|---|---|---|
| aggi2 | Redtop | *Agrostis gigantea* | FACW | luhe | Water primrose | *Ludwigia hexapetala* | OBLW |
| algl2 | European Alder | *Alnus glutinosa* | FACW | lyvu | Garden loosestrife | *Lysimachia vulgaris* | OBLW |
| arhi3 | Carpetgrass | *Arthraxon hispidus* | FAC- | lysa2 | Purple loosestrife | *Lythrum salicaria* | FACW |
| beth | Japanese barberry | *Berberis thunbergii* | FACW | maqu | European waterclover | *Marsilea quadrifolia* | OBLW |
| bevu | European barberry | *Berberis vulgaris* | FACW | mivi | Japanese stiltgrass | *Microstegium vimineum* | FAC |
| butom | Flowering Rush | *Butomus umbellatus* | OBLW | nami2 | Water cress | *Nasturtium officinale* | OBLW |
| calli6 | Pond water-starwort | *Callitriche stagnalis* | OBLW | pelo | Low smartweed | *Persicaria longiseta* | FACW |
| egde | Brazilian waterweed | *Egeria densa* | OBLW | phar | Reed canary grass | *Phalaris arundinacea* | FACW |
| elan | Russian olive | *Elaeagnus angustifolia* | FACU | phau7 | Common Reed | *Phragmites australis* | OBLW |
| elum | Autumn olive | *Elaeagnus umbellata* | FACU | potr | Rough bluegrass | *Poa trivialis* | FACW |
| ephi | Hairy willow-herb | *Epilobium hirsutum* | FACW | pocu6 | Japanese knotweed | *Polygonum (Faloia) cuspidatum* | FAC- |
| eppa5 | Willow-herb | *Epilobium parviflorum* | FACW | pgpf | Mile-a-minute | *Polygonum perfoliatum* | FAC- |
| fasa | Giant knotweed | *Fallopia sachalinensis* | OBLW | puera | Kudzu-vine | *Pueraria lobata* | FAC- |
| gldi | Mudmats | *Glossostigma diandrum* | OBLW | pysp1 | Apple/crabapple/pear | *Pyrus sp.* | FAC? |
| hola | Velvetgrass | *Holcus lanatus* | FAC | rhfr | Glossy Buckthorn | *Rhamnus frangula* | FAC- |
| huja | Japanese Hops | *Humulus japonicus* | FACU | romu | Multiflora rose | *Rosa multiflora* | FACU |
| loja | Japanese honeysuckle | *Lonicera japonica* | FAC- | tyan | Cattail (hybrid) | *Typha angustifolia* | OBLW |
| lomo | Morrow's honeysuckle | *Lonicera morrowii* | NI | tygl | Hybrid cattail | *Typha x glauca* | OBLW |
| lota | Tartarian honeysuckle | *Lonicera tatarica* | | | | | |

ATTACHMENT B

FIGURES




WHM consulting, INC.
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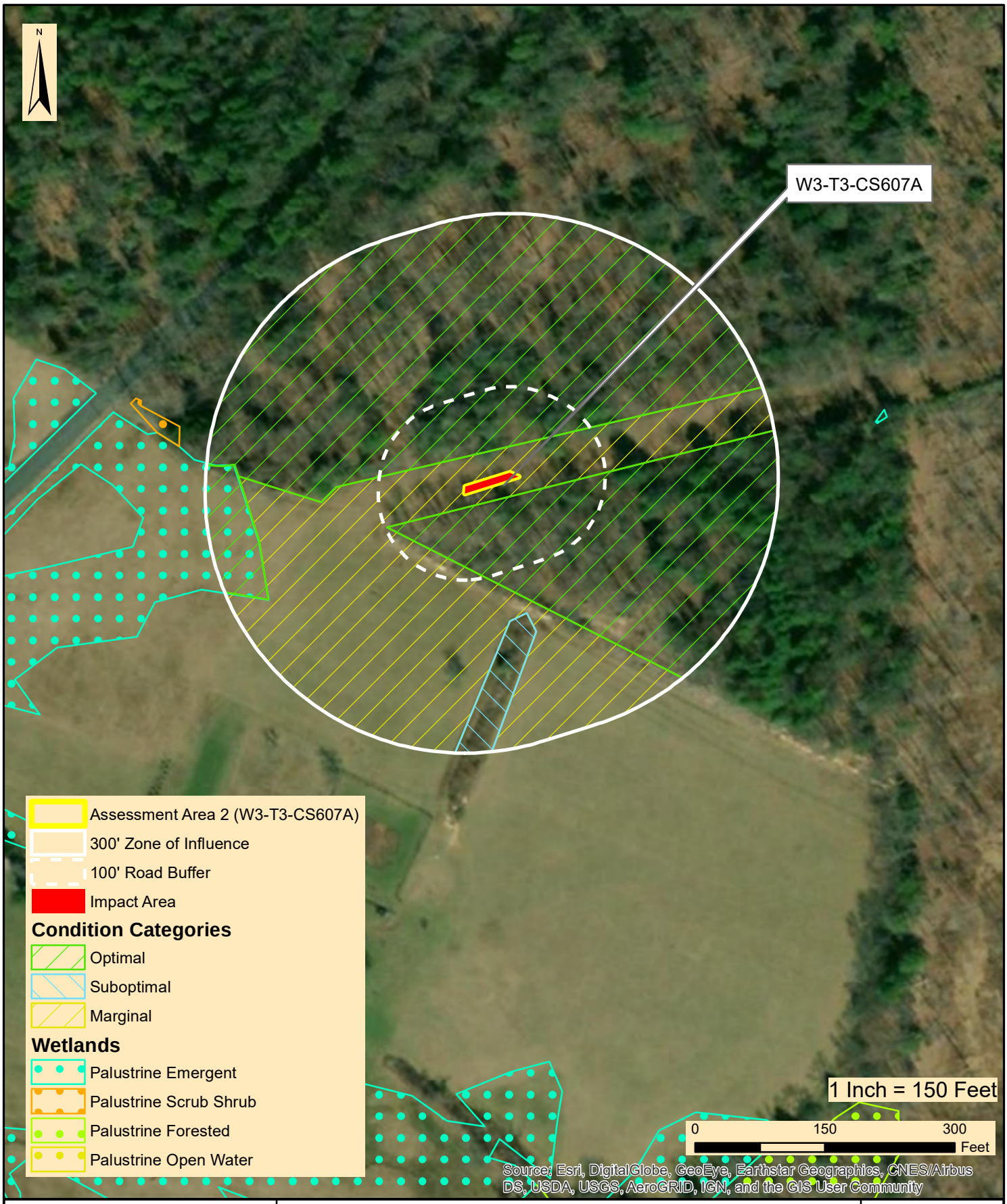
**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - COMPRESSOR STATION 607A

WETLAND FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 1 (W2-T3-CS607A, W2-T2-CS607A, W2-T1-CS607A)

FAIRMONT TOWNSHIP LUZERNE COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 08/07/2019 |
| WHM Drawing Number: | WILLIAMS204A001 |
| Drawn By: | CSB |
| Figure Number: | 1 |

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**TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC**

LEIDY SOUTH PROJECT - COMPRESSOR STATION 607A

WETLAND FUNCTIONAL ASSESSMENT - ASSESSMENT AREA 2 (W3-T3-CS607A)

FAIRMONT TOWNSHIP LUZERNE COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 08/07/2019 |
| WHM Drawing Number: | WILLIAMS204A002 |
| Drawn By: | CSB |
| Figure Number: | 2 |

# APPENDIX G

# COMPRESSOR STATION 620A WETLAND AND WATERCOURSE DELINEATION REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX G
COMPRESSOR STATION 620A WETLAND AND WATERCOURSE DELINEATION REPORT

HEGINS TOWNSHIP, SCHUYLKILL COUNTY, PENNSYLVANIA

## Table of Contents

Section


1.0 Introduction

2.0 Desktop Analysis

- 2.1 USGS Topographic and LiDAR Data
- 2.2 Aerial Photography
- 2.3 National Wetland Inventory
- 2.4 USDA/NRCS Soil Descriptions

3.0 Results

- 3.1 Wetlands
- 3.2 Waterways

4.0 Conclusions

5.0 References


Figures


1 Project Location Map
2 USDA-NRCS Soils and NWI Map


Attachments


A Wetland and Water Resource Delineation Data Package

- .... Water Resources Delineation Map
- .... Photographic Documentation
- .... Wetland, Upland and Waterway Data Forms

B Wetland and Water Resource Summary Table

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX G
COMPRESSOR STATION 620A WETLAND AND WATERCOURSE DELINEATION REPORT

HEGINS TOWNSHIP, SCHUYLKILL COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Transco) to conduct a delineation of wetland and water resources associated with the Compressor Station 620A (Project) located in Hegins Township, Schuylkill County, Pennsylvania (Figure 1 – Project Location Map). The purpose of this investigation was to determine whether regulated wetlands and waters exist within the subject project area in accordance with U.S. Army Corps of Engineers (USACE) guidelines which as regulated under Section 404 of the Clean Water Act (CWA) and Pa Code 25 Chapter 105. This report provides information on the desktop analysis, data collected, delineation field findings, and results pertaining to wetland and water resources identified in the study area. The delineation was performed in March 2019.

# 2.0 DESKTOP ANALYSIS

Prior to conducting field investigations, a review of natural resource data associated with the investigation area was completed to help establish probable areas where wetlands and watercourses could be located before conducting the onsite field investigation. The following sections outlined specific data reviewed for the investigation area.

## 2.1 USGS TOPOGRAPHIC AND LiDAR DATA

The 7.5-minute USGS quadrangles for Tremont, Pennsylvania, were reviewed in the vicinity of the project area. For more detailed topographic information, PAMAP LiDAR (2-foot Intervals) was reviewed to determine slope breaks and microtopography that could result in wetlands and/or waterways.

## 2.2 AERIAL PHOTOGRAPHY

Multiple sources of online accessible current and historical aerial imagery were reviewed. In particular, leaf-off aerial imagery was evaluated for saturation that may persist long enough into the growing season to create wetland conditions.

## 2.3 NATIONAL WETLAND INVENTORY

The U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) mapping within and surrounding the project area is presented in Figure 2 - USDA-NRCS Soils and NWI Map. According to NWI mapping there is 1 NWI wetland located within the investigation area (See Table 2-1).

| NWI Code | NWI Wetland Name | Quantity |
|---|---|---|
| PFO1C | Palustrine, Forested, Broadleaf, Seasonally Flooded | 1 |

Table 2-1. NWI Wetlands

## 2.4 USDA/NRCS SOIL DESCRIPTIONS

The soil associations onsite are identified through the soil map units mapped by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) in the Soil Survey of Schuylkill County, Pennsylvania. In addition, the hydric soils list for Clinton County was reviewed to determine if these soils are Hydric Soils or contain Hydric Inclusion. There are 10 soil mapping units located within the investigation area. Each soil series and their hydric rating is provided in Table 2-1.

| Soil Mapping Unit | Map Unit Name | Slope (%) | Hydric Soil/ Hydric Inclusion |
|---|---|---|---|
| At | Atkins loam | - | Yes |
| Ba | Basher silt loam | - | Yes |
| BxB | Buchanan extremely stony loam | 3 to 8 | Yes |
| CaB | Calvin shaly silt loam | 3 to 8 | Yes |
| CaC | Calvin shaly silt loam | 3 to 8 | Yes |
| KeB | Kedron silt loam | 3 to 8 | No |
| LeB | Leck kill channery silt loam | 3 to 8 | No |
| LeC | Leck kill channery silt loam | 8 to 15 | No |
| MeB | Meckesville loam | 3 to 8 | No |
| WKF | Weikert and Klinesville shaly silt loams, steep | - | No |

Table 2-2: Soil Mapping Unit and Hydric Soils Listing

# 3.0 RESULTS

After the completion of a desktop analysis, a formal wetland delineation was completed. Areas exhibiting the potential for regulated wetlands and waters were evaluated to determine whether they satisfied the USACE and/or PADEP requirements. Attachment A includes specific information for each resource including: wetland delineation mapping, photographic documentation, and data forms. Attachment B – Wetland and Water Resource Summary Tables, provides specific information for each resource identified within the investigation area. The Pennsylvania Level 2 Rapid Assessment Report is provided in Attachment C. The following sections provide a brief summary of the resources identified within the investigation area.

## 3.1 WETLANDS

In total, 2 wetlands were identified during the delineation. One of the wetland identified had been previously impacted during past farming activities. Wetland were defined as either “Other” or “Exceptional Value” based on Pa Code Title 25, Chapter 105.17 – Wetlands. Approximately 75,012 square feet of PEM wetlands and 147,517 square feet of palustrine forested (PFO) wetlands were identified.

## 3.2 WATERWAYS

In total, 3 waterways were identified during the delineation. Approximately 368 square feet of ephemeral channels, 2,258 square feet of intermittent channels, and 94,066 square feet of perennial channels were identified.

## 4.0 CONCLUSIONS

Based on the results of the field investigation 222,529 square feet of wetlands and 96,692 square feet of stream channel were identified within the investigation area. Any impacts to the identified resources would require authorization under PADEP and USACE guidelines.

## 5.0 REFERENCES


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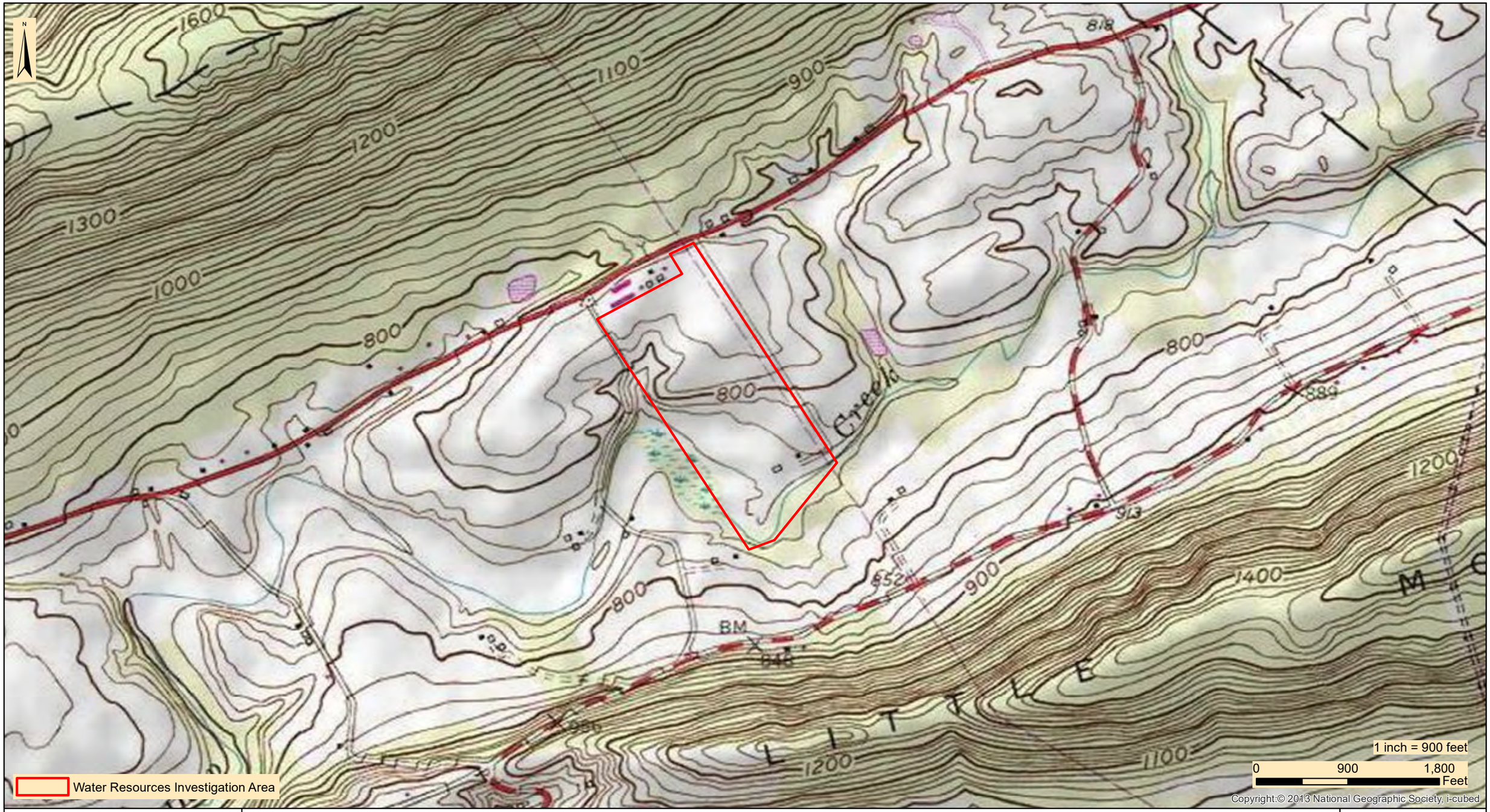
FIGURES

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**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**

LEIDY SOUTH PROJECT

COMPRESSOR STATION 620-A

PROJECT LOCATION MAP

HEGINS TOWNSHIP | SCHUYLKILL COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 05/15/19 |
| WHM DRAWING NUMBER: | WILLIAMS206A001 |
| Drawn By: | BWH |
| Figure Number: | 1 |

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
## LEIDY SOUTH PROJECT
## COMPRESSOR STATION 620-A

### USDA-NRCS SOILS AND NWI MAP

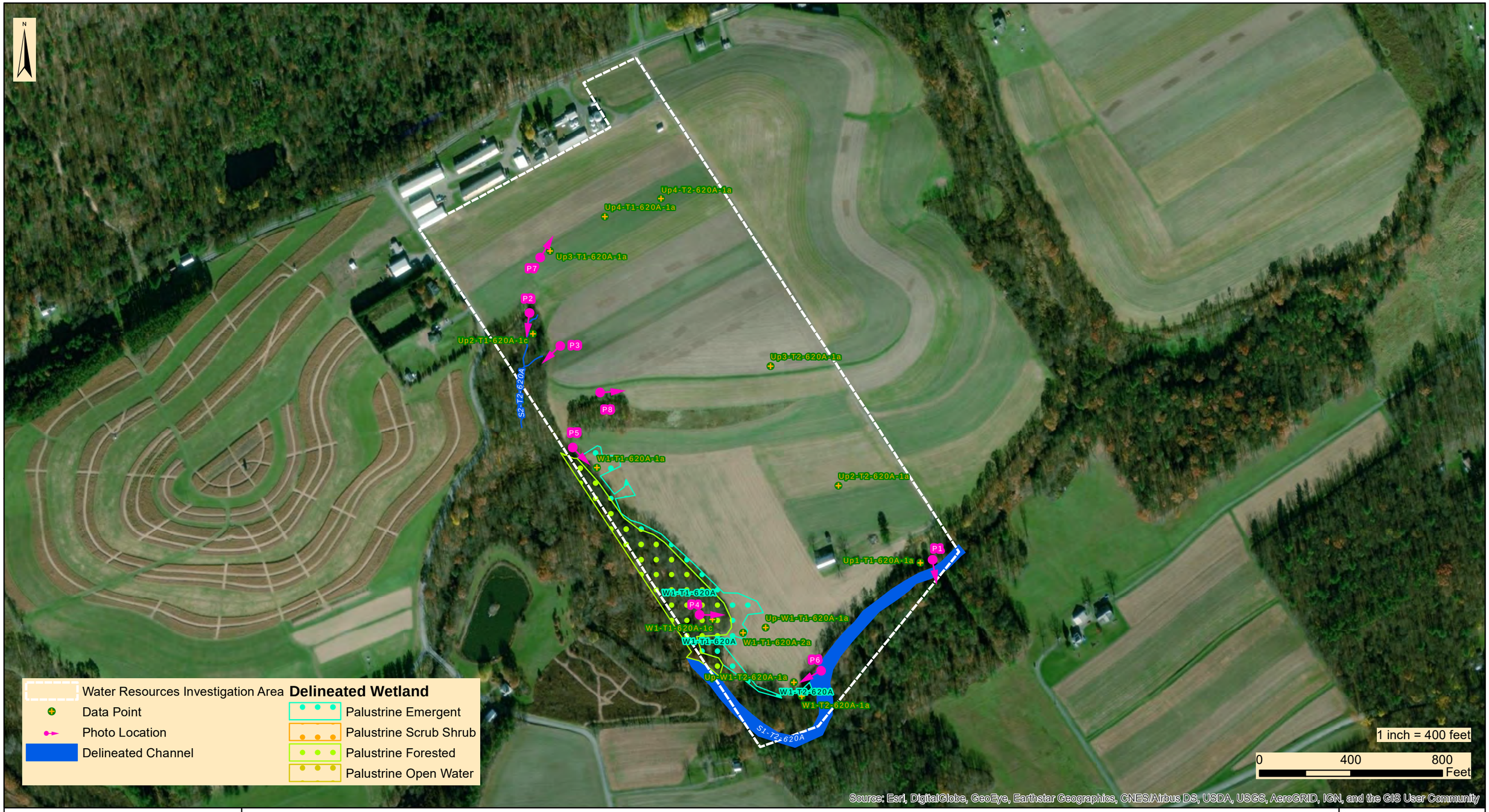
HEGINS TOWNSHIP | SCHUYLKILL COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 05/15/19 |
| WHM DRAWING NUMBER: | WILLIAMS206A002 |
| Drawn By: | BWH |
| Figure Number: | 2 |

ATTACHMENT A

WETLAND AND WATER RESOURCE DELINEATION DATA PACKAGE

WATER RESOURCES DELINEATION MAP

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# TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
## LEIDY SOUTH PROJECT
## COMPRESSOR STATION 620-A

### WETLAND DELINEATION AND PHOTO LOCATION MAP

HEGINS TOWNSHIP | SCHUYLKILL COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 05/15/19 |
| WHM DRAWING NUMBER: | WILLIAMS206A003 |
| Drawn By: | BWH |
| Figure Number: | 3 |

# PHOTOGRAPHIC DOCUMENTATION

**ID:** Photo 1

**Date:** 3/20/2019

**Taken by:** JH

**Comments:** This photo shows a view of S1-T2-620A

**ID:** Photo 2

**Date:** 3/20/2019

**Taken by:** PD

**Comments:** This photo shows a view of S2-T2-620A

**ID:** Photo 3

**Date:** 3/20/2019

**Taken by:** PD

**Comments:** This photo shows a view of S3-T2-620A

**ID:** Photo 4

**Date:** 3/20/2019

**Taken by:** JH

**Comments:** This photo shows a view of W1-T1-620A within the forested portion

**ID:** Photo 5

**Date:** 3/20/2019

**Taken by:** JH

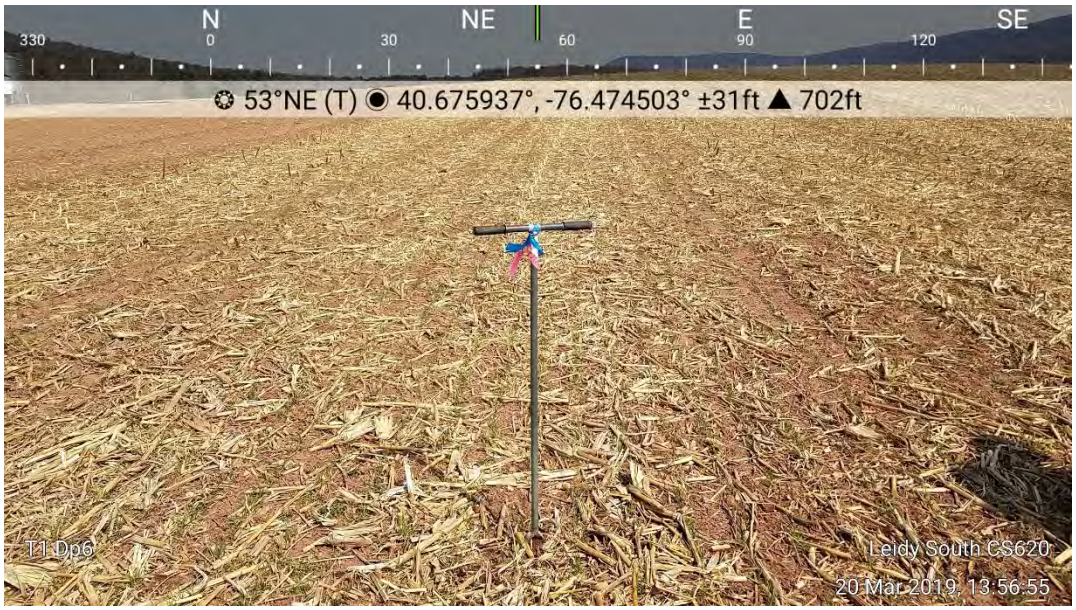
**Comments:** This photo shows a view of W1-T1-620A within the PEM portion

**ID:** Photo 6

**Date:** 3/20/2019

**Taken by:** PD

**Comments:** This photo shows a view of W2-T2-620A




**ID:** Photo 7

**Date:** 3/20/2019

**Taken by:** JH

**Comments:** This photo shows a view of an upland corn field within the investigation area

**ID:** Photo 8

**Date:** 3/20/2019

**Taken by:** JH

**Comments:** This photo shows a view of a grass lined swale within the investigation area.

# WETLAND, UPLAND, AND WATERWAYS DATA FORMS

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T1-620A-1a

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 40.67328 Long.: -76.4738 Datum: NAD 83

Soil Map Unit Name At: Atkins silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 1"

Water table present? Yes X No ___ Depth (inches): 0"

Saturation present? Yes X No ___ Depth (inches): 0"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T1-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Juncus effusus* | 40 | Yes | FACW |
| 2 *Carex lurida* | 40 | Yes | OBL |
| 3 *Microstegium vimineum* | 30 | Yes | FAC |
| 4 *Poa trivialis* | 10 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 40 | x 1 = | 40 | |
| FACW species | 50 | x 2 = | 100 | |
| FAC species | 30 | x 3 = | 90 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 120 | (A) | 230 | (B) |

Prevalence Index = B/A = 2

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T1-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 5/1 | 75 | 7.5YR 5/6 | 25 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T1-620A-1c

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 40.671438 Long.: -76.472012 Datum: NAD 83

Soil Map Unit Name At: Atkins silt loam NWI Classification: PFO1C: Freshwater Forested/Shrub Wetland

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

| | | | | | |
|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): ___ |
| Water table present? | Yes | X | No | ___ | Depth (inches): 0" |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): 0" |

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T1-620A-1c

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Fraxinus pennsylvanica* | 60 | Yes | FACW |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 60 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Cornus amomum* | 30 | Yes | FACW |
| 2 *Lindera benzoin* | 20 | Yes | FAC |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 50 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Microstegium vimineum* | 30 | Yes | FAC |
| 2 *Grass sp.* | 30 | Yes | OBL-UPL |
| 3 *Solidago sp.* | 25 | Yes | OBL-UPL |
| 4 *Cornus amomum* | 10 | No | FACW |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 95 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 71.43% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T1-620A-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5" | 5YR 4/2 | 75 | 2.5YR 5/6 | 25 | | | Clay Loam | |
| 5-12" | 5YR 4/2 | 75 | 2.5YR 5/6 | 25 | | | Clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T1-620A-2a

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 40.671272 Long.: -76.471532 Datum: NAD 83

Soil Map Unit Name At: Atkins silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks: Field, stunted stress no corn/vegeation.

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): 2"

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T1-620A-2a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Setaria pumila* | 15 | Yes | FAC |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 15 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 15 | x 3 = | 45 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 15 | (A) | 45 | (B) |

Prevalence Index = B/A = 3.00

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid test for hydrophytic vegetation
- X 2 - Dominance test is >50%
- ___ 3 - Prevalence index is ≤3.0*
- ___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks: Data point taken at the edge of a cornfield where an algal mat and very little vegetation were present .

## SOIL

**Sampling Point:** W1-T1-620A-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR 4/2 | 90 | 5YR 5/6 | 90 | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up-W1-T1-620A-1a

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 40.671335 Long.: -76.471176 Datum: NAD 83

Soil Map Unit Name: Ba: Basher silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up-W1-T1-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Zea mays* | 100 | Yes | UPL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 100 | x 5 = | 500 | |
| Column totals | 100 | (A) | 500 | (B) |

Prevalence Index = B/A = 5

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks: Data point was taken in a crop field

## SOIL

**Sampling Point:** Up-W1-T1-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR 4/3 | 100 | | | | | Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: W1-T2-620A-1a

Investigator(s): CG Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 40.670504 Long.: -76.470622 Datum: NAD 83

Soil Map Unit Name At: Atkins silt loam NWI Classification: R5UBH: Riverine

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

**Is the sampled area within a wetland?** Yes X No ___

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes X No ___ Depth (inches): 6-12"

Water table present? Yes X No ___ Depth (inches): ___

Saturation present? Yes X No ___ Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water in the middle of wetland attached to stream through inlet without outflow.

**VEGETATION** - Use scientific names of plants

**Sampling Point:** W1-T2-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Betula nigra* | 2 | Yes | FACW |
| 2 *Cornus amomum* | 2 | Yes | FACW |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 4 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Carex lurida* | 50 | Yes | OBL |
| 2 *Juncus effusus* | 30 | Yes | FACW |
| 3 *Dichanthelium scabriusculum* | 10 | No | OBL |
| 4 *Dichanthelium clandestinum* | 5 | No | FAC |
| 5 *Persicaria sagittata* | 5 | No | OBL |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 65 | x 1 = | 65 |
| FACW species | 34 | x 2 = | 68 |
| FAC species | 5 | x 3 = | 15 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 104 (A) | | 148 (B) |

Prevalence Index = B/A = 1

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

X 2 - Dominance test is >50%

X 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes X No ___

Remarks:

## SOIL

**Sampling Point:** W1-T2-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3" | 10YR 4/4 | | | | | | Coarse sand | |
| 3-12" | 7.5YR 5/1 | 98 | 7.5 YR 5/6 | 2 | C | M | Sandy clay | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes X No ___

Remarks: Redox present

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up-W1-T2-620A-1a

Investigator(s): CG Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 40.670669 Long.: -76.470743 Datum: NAD 83

Soil Map Unit Name At: Atkins silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: data point taken at the edge of a corn field within the floodplain of Deep Creek

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up-W1-T2-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Zea mays* | 100 | Yes | UPL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 100 | x 5 = | 500 | |
| Column totals | 100 | (A) | 500 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: Corn 100%

## SOIL

**Sampling Point:** Up-W1-T2-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 7.5YR 3/3 | | | | | | Coarse sandy loam | |
| 12+ | 7.5YR 4/4 | | | | | | Fine sand | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up1-T1-620A-1a

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat.: 40.672086 Long.: -76.468718 Datum: NAD 83

Soil Map Unit Name: Ba: Basher silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: Potential future wetland in depressional area behind waterbar. Problem area on ROW, No Vegetation, Algal Mat. 35° F and Sunny

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes X No ___

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Problem area on ROW

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up1-T1-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 0 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 0 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 0 (A) | | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks: No vegetation due to recent disturbance

## SOIL

**Sampling Point:** Up1-T1-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type* | Redox Features Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7" | 5YR 3/2 | | | | | | | |
| 7-14" | 5YR 4/3 | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Suface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

___ Red Parent Material (F21) **(MLRA 127, 147)**
___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up2-T1-620A-1c

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15%

Subregion (LRR or MLRA): LRR N Lat.: 40.674899 Long.: -76.474777 Datum: NAD 83

Soil Map Unit Name WKF: Weikert and Klinesville shaly silt loams NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up2-T1-620A-1c

| Tree Stratum (Plot Size:_____30'____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Prunus serotina* | 60 | Yes | FACU |
| 2 | *Pinus strobus* | 20 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 80 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Lindera benzoin* | 30 | Yes | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| | | 30 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Dryopteris marginalis* | 20 | Yes | FACU |
| 2 | *Alliaria petiolata* | 5 | Yes | FACU |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| | | 25 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|---|
| 1 | *Toxicodendron radicans* | 5 | Yes | FAC |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| | | 5 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 35 | x 3 = | 105 | |
| FACU species | 105 | x 4 = | 420 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 140 | (A) | 525 | (B) |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** Up2-T1-620A-1c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR 4/4 | 100 | | | | | Silt Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up2-T2-620A-1a

Investigator(s): CG Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): LRR N Lat.: 40.673024 Long.: -76.469995 Datum: NAD 83

Soil Map Unit Name LeB:Leck kill channery silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up2-T2-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Lolium perenne* | 100 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 100 | x 4 = | 400 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 100 | (A) | 400 | (B) |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks:

## SOIL

**Sampling Point:** Up2-T2-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 7.5YR 3/3 | | | | | | | No Redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10"

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up3-T1-620A-1a

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 8-15%

Subregion (LRR or MLRA): LRR N Lat.: 40.675891 Long.: -76.474487 Datum: NAD 83

Soil Map Unit Name LeC: Leck kill channery silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks: Upland-corn

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up3-T1-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Zea mays* | 100 | Yes | UPL |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 100 | x 5 = | 500 | |
| Column totals | 100 | (A) | 500 | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: Corn field

## SOIL

**Sampling Point:** Up3-T1-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR 4/4 | 100 | | | | | Silt Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up3-T2-620A-1a

Investigator(s): CG Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): LRR N Lat.: 40.674471 Long.: -76.471036 Datum: NAD 83

Soil Map Unit Name CaB: Calvin shaly silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up3-T2-620A-1a

| Tree Stratum (Plot Size: 30') | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size: 15') | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size: 5') | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Lolium perenne* | 80 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 80 = | Total Cover | |

| Woody Vine Stratum (Plot Size: 30') | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 80 | x 4 = | 320 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 80 | (A) | 320 | (B) |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** Up3-T2-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 7.5YR 3/3 | 100 | | | | | Gravel | No Redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ___ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up4-T1-620A-1a

Investigator(s): DW, JH Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): LRR N Lat.: 40.676298 Long.: -76.473615 Datum: NAD 83

Soil Map Unit Name LeB: Leck kill channery silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upland-corn

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up4-T1-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Zea mays* | 100 | Yes | UPL |
| 2 *Grass sp.* | 20 | No | OBL-UPL |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 120 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 100 | x 5 = | 500 | |
| Column totals | 100 | (A) | 500 | (B) |

Prevalence Index = B/A = 5

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** Up4-T1-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 5YR 4/4 | 100 | | | | | Silt Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Leidy South Project City/County: Schuylkill County Sampling Date: 03/20/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point: Up4-T2-620A-1a

Investigator(s): CG Section, Township, Range: Hegins Township

Landform (hillslope, terrace, etc.): hilltop Local relief (concave, convex, none): none Slope (%): 3-8%

Subregion (LRR or MLRA): LRR N Lat.: 40.676499 Long.: -76.472724 Datum: NAD 83

Soil Map Unit Name CaB: Calvin shaly silt loam NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes x No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes x No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

**Is the sampled area within a wetland?** Yes ___ No X

Remarks:

## HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsley Vegetated Concave Surface
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up4-T2-620A-1a

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Lolium perenne* | 70 | Yes | FACU |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 70 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 70 | x 4 = | 280 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 70 | (A) | 280 | (B) |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes ___ No X

Remarks:

## SOIL

**Sampling Point:** Up4-T2-620A-1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10" | 7.5YR 4/4 | 100 | | | | | | No Redox |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147,148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Suface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils:**

- ___ Red Parent Material (F21) **(MLRA 127, 147)**
- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

**STREAM ID:** S1-T2-620A

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Schulykill

**Stream Name:** ☐ UNNAMED ☑ NAMED: Deep Creek

**Date:** 03/20/2019

**Stream Type:** ☑ STREAM ☐ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☑ yes ☐ no

**Flow Type:** ☑ Perennial ☐ Intermittent ☐ Ephemeral

**Stream Flow Direction:** Southwest

**Width (ft) (water's edge to water's edge):** 50'

**Width (ft) (bank to bank):** 70'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☑ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other _____

**Probed Stream Depth**
- ☐ N/A
- ☐ 0 – 6"
- ☑ 7 – 12"
- ☑ 13 – 24"
- ☑ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other_____

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 6'

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 6'

Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**_____
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:_____

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:_____

Highest Left Bank Height*:_____
Highest Left Bank Slope*:_____
Highest Right Bank Height*:_____
Highest Right Bank Slope*:_____
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-_____
☐ no
If yes, list:
Hemlock, Red Maple, Multiflora Rose, Silky Dogwood

**Width of riparian corridor (ft):**_____

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):_____
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☑ yes
☐ no
If yes, list:

**Riparian/Terrestrial Organisms**
☑ yes
☐ no
If yes, list:

**Stream has potential for fish presence**
☑ yes
☐ no

**T&E Species**
☐ yes, list ID: WL/VG-_____
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☑ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):_____

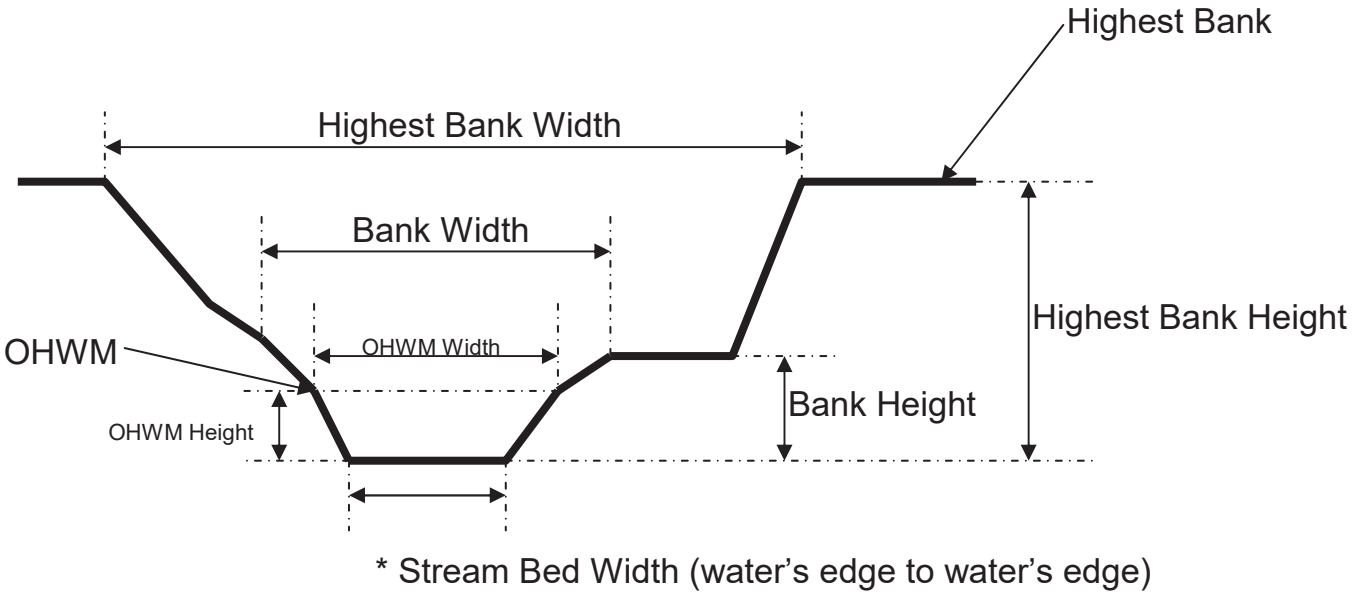
**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:** All were present

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:_____
☐ man-altered – Explain:_____

**NOTES:**




*Stream bed width is variable

**DEFINITIONS:**

**Perennial:** has flowing water year-round during a typical year.

**Intermittent:** has flowing water during certain times of the year, when groundwater provides water for stream flow.

**Ephemeral:** has flowing water only during, and for a short duration after, precipitation events in a typical year.

**Run**: A reach of stream characterized by fast flowing low turbulence water.

**Riffle:** A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.

**Pool:** A reach of stream that is characterized by deep low velocity water and a smooth surface.

**STREAM ID:** S2-T2-620A

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

County: Schuylkill

Stream Name: ☑ UNNAMED ☐ NAMED:

Date: 03/20/2019

Stream Type: ☑ STREAM ☐ DITCH/CANAL

Map No. :

Observers: CG, PD

## CHARACTERISTICS

Water Present: ☑ yes ☐ no

Flow Type: ☑ Perennial ☐ Intermittent ☐ Ephemeral

Stream Flow Direction: South

Width (ft) (water's edge to water's edge): 4'

Width (ft) (bank to bank): 7'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☑ Gravel
- ☐ Sand
- ☑ Silt
- ☑ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☐ N/A
- ☑ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☑ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 4'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 4'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

Height (ft) (OHWM from stream bed):
*Direction when facing downstream

Evidence of Erosion: ☑ yes ☐ no

☐ Sloughing ☑ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Red Maple, Multiflora Rose, Silky Dogwood

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

Discontinuous OHWM: ☐ yes ☑ no

Geometry: ☐ Meandering ☑ Relatively Straight

Presence of: ☑ run ☐ pools ☑ riffles
Explain:

Is the stream/tributary:
- ☑ natural
- ☐ manmade – Explain:
- ☐ man-altered – Explain:

NOTES:

**STREAM ID:** S3-T2-620A

**STREAM DATA**

☐ ROW ☑ Project Facility STATE PA
☐ Access Road ☐ Staging/Storage Area

**County:** Schuylkill

**Stream Name:** ☑ UNNAMED ☐ NAMED:

**Date:** 03/20/2019

**Stream Type:** ☐ STREAM ☑ DITCH/CANAL

**Map No. :**

**Observers:** CG, PD

## CHARACTERISTICS

**Water Present:** ☐ yes ☑ no

**Flow Type:** ☐ Perennial ☑ Intermittent ☐ Ephemeral

**Stream Flow Direction:** Southwest

**Width (ft) (water's edge to water's edge):** 4'

**Width (ft) (bank to bank):** 6'
(above OHWM; use OHWM Criteria below)

## CHARACTERISTICS

**Substrate Type**
- ☐ Bedrock
- ☐ Gravel
- ☑ Sand
- ☑ Silt
- ☐ Cobbles
- ☐ Clay
- ☐ Concrete
- ☐ Other

**Probed Stream Depth**
- ☑ N/A
- ☐ 0 – 6"
- ☐ 7 – 12"
- ☐ 13 – 24"
- ☐ 25 – 36"
- ☐ 37"+

**Water Clarity**
- ☐ Clear
- ☐ Discolored
- ☐ Oily Film
- ☐ Other

## BANK HEIGHT AND SLOPE

**Left Bank***
Height (ft): 4'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Right Bank***
Height (ft): 4'
Slope:
- ☐ 0-30º (4:1)
- ☐ 31-45º (3:1)
- ☑ 46-60º (2:1)
- ☐ 61-90º (1:1)

**Height (ft) (OHWM from stream bed):**
*Direction when facing downstream

**Evidence of Erosion:** ☑ yes ☐ no

☐ Sloughing ☐ Undercutting ☐ Impact from Cattle

☐ Other:

**NOTES for HIGH BANK for Construction (if present)**
Width (ft) Highest Bank to Highest Bank:

Highest Left Bank Height*:
Highest Left Bank Slope*:
Highest Right Bank Height*:
Highest Right Bank Slope*:
*Direction when facing downstream

## ASSOCIATED HABITAT

**Riparian Vegetation**
☑ yes, list ID: HB-
☐ no
If yes, list:
Red Maple, White Pine, Pokeweed, Multiflora Rose

Width of riparian corridor (ft):

**Stream Fringe** (5' or less including both banks and does not meet wetland criteria)
☐ yes, width (ft):
☑ no
If yes, list :

**Aquatic Vegetation**
☐ yes
☑ no
If yes, list:

## ASSOCIATED SPECIES

**Aquatic Organisms**
☐ yes
☑ no
If yes, list:

**Riparian/Terrestrial Organisms**
☐ yes
☑ no
If yes, list:

**Stream has potential for fish presence**
☐ yes
☑ no

**T&E Species**
☐ yes, list ID: WL/VG-
☑ no

## OHWM Criteria – Ordinary High Water Mark

- ☑ clear, natural line impressed on bank
- ☐ changes in character of soil
- ☐ shelving
- ☐ vegetation matted down, bent or absent
- ☐ leaf litter disturbed or washed away
- ☐ sediment deposition
- ☐ water staining
- ☐ presence of litter and debris
- ☐ destruction of terrestrial vegetation
- ☐ presence of wrack line
- ☐ sediment sorting
- ☐ scour
- ☐ abrupt change in plant community
- ☐ other (list):

**Discontinuous OHWM:** ☐ yes ☑ no

**Geometry:** ☑ Meandering ☐ Relatively Straight

**Presence of:** ☑ run ☑ pools ☑ riffles
**Explain:** All were present

**Is the stream/tributary:**
☑ natural
☐ manmade – Explain:
☐ man-altered – Explain:

**NOTES:**

# ATTACHMENT B

# WETLAND AND WATER RESOURCE SUMMARY TABLES

# WETLAND RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**

**LEIDY SOUTH PROJECT - COMPRESSOR STATION 620A**

**WETLAND RESOURCE SUMMARY TABLE**

| Wetland ID | Dataform ID | Cowardin Code | Resource Size | | | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Chapter 105.17 Wetland Designation | Watershed Information | | | Wetland Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | Watershed Name | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | |
| W1-T1-CS620A | W1-T1-CS620A-1a, W1-T1-CS620A-2a | PEM | 1,361 | 99 | 73,238 | Yes | RPWWD | 40.671557 | -76.471581 | Other | Deep Creek | CWF, MF | - | A PEM and PFO wetland complex that abuts Deep Creek. Areas of the wetland extend into active crop fields Saturation, a depleted matrix and algal mats were present in the crop field. |
| | W1-T1-CS620A-1c | PFO | 1,200 | 218 | 147,517 | | | 40.67169 | -76.472393 | | | | | |
| W1-T2-CS620A | W1-T2-CS620A-1a | PEM | 75 | 25 | 1,774 | No | RPWWD | 40.670565 | -76.470599 | Other | Deep Creek | CWF, MF | - | A PEM floodplain wetland that abuts Deep Creek. |
| | | | | | **Total PEM Wetlands** | | | | | | | | | |
| | | | | | 75,012 | | | | | | | | | |
| | | | | | **Total PSS Wetlands** | | | | | | | | | |
| | | | | | 0 | | | | | | | | | |
| | | | | | **Total PFO Wetlands** | | | | | | | | | |
| | | | | | 147,517 | | | | | | | | | |
| | | | | | **Total POW Wetlands** | | | | | | | | | |
| | | | | | 0 | | | | | | | | | |
| | | | | | **TOTAL** | | | | | | | | | |
| | | | | | **222,529** | | | | | | | | | |

# WATERCOURSE RESOURCE SUMMARY TABLE

**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)**
**LEIDY SOUTH PROJECT - COMPRESSOR STATION 620A**
**WATERCOURSE RESOURCE SUMMARY TABLE**

| Watercourse ID | Stream Name | Type | Resource Size | | | Floodway - FEMA & 50ft (ac) | FEMA Floodplain (ac) | Open-Ended Boundary | Waters Types | Latitude (dd nad83) | Longitude (dd nad83) | Watershed Name | PA Code Chapter 93 Water Quality | | PFBC Classification | | | Watercourse Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length (feet) | Width (feet) | Area (sq. ft.) | | | | | | | | PA Code Chapter 93 Water Quality Designated Use | PA Code Chapter 93 Water Quality Existing Use | Stocked Trout | Naturally Reproducing Trout | Class A Wild Trout | |
| S1-T2-620A | Deep Creek | Perennial | 1,841 | 50 | 94,066 | 12.57 | 12.57 | Yes | RPW | 40.671372 | -76.469668 | Deep Creek | CWF, MF | - | Yes | No | No | Flows acrossed the northern limits of the survey area. Fish observed within the stream. Erosion present. |
| S2-T2-620A | UNT to Deep Creek | Intermittent | 565 | 4 | 2,258 | 1.06 | - | Yes | RPW | 40.674784 | -76.474914 | Deep Creek | CWF, MF | - | Yes | No | No | Begins at the woodline of a crop field. Erosion present |
| S3-T2-620A | UNT to Deep Creek | Ephemeral | 92 | 4 | 368 | | - | No | NRPW | 40.674568 | -76.474778 | Deep Creek | CWF, MF | - | Yes | No | No | Begins at the woodline of a crop field and flows into S2-T2-620A. Erosion present |
| | | | | **Total Ephemeral Channels** | 368 | | | | | | | | | | | | | |
| | | | | **Total Intermittent Channels** | 2,258 | | | | | | | | | | | | | |
| | | | | **Total Perennial Channels** | 94,066 | | | | | | | | | | | | | |
| | | | | **TOTAL** | **96,692** | | | | | | | | | | | | | |

# APPENDIX H

# COMPRESSOR STATION 610 WETLAND AND WATERCOURSE DELINEATION REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX H
COMPRESSOR STATION 610 WETLAND AND WATERCOURSE DELINEATION REPORT
(REVISION 1)

ORANGE TOWNSHIP, COLUMBIA COUNTY, PENNSYLVANIA

Table of Contents

Section

1.0 Introduction

2.0 Desktop Analysis

- 2.1 USGS Topographic and LiDAR Data
- 2.2 Aerial Photography
- 2.3 National Wetland Inventory
- 2.4 USDA/NRCS Soil Descriptions

3.0 Results

4.0 References

Figures

1 Project Location Map
2 USDA-NRCS Soils and NWI Wetlands Map

Attachments

A Wetland and Water Resource Delineation Data Package

- .... Water Resources Delineation Map
- .... Photographic Documentation
- .... Wetland, Upland and Waterway Data Forms

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
LEIDY SOUTH PROJECT

APPENDIX H
COMPRESSOR STATION 610 WETLAND AND WATERCOURSE DELINEATION REPORT
(REVISION 1)

ORANGE TOWNSHIP, COLUMBIA COUNTY, PENNSYLVANIA

# 1.0 INTRODUCTION

WHM Consulting, Inc. (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Transco) to conduct a delineation of wetland and water resources associated with the Compressor Station 610 (Project) located in Orange Township, Columbia County, Pennsylvania (Figure 1 – Project Location Map). The purpose of this investigation was to determine if regulated wetlands and waters exist within the subject project area in accordance with U.S. Army Corps of Engineers (USACE) guidelines which as regulated under Section 404 of the Clean Water Act (CWA) and Pa Code 25 Chapter 105. This report provides information on the desktop analysis, data collected, delineation field findings, and results pertaining to wetland and water resources identified in the study area. The delineation was performed in April 2019.

# 2.0 DESKTOP ANALYSIS

Prior to conducting field investigations, a review of natural resource data associated with the investigation area was completed to help establish probable areas where wetlands and watercourses could be located before conducting the onsite field investigation. The following sections outlined specific data reviewed for the investigation area.

## 2.1 USGS TOPOGRAPHIC AND LiDAR DATA

The 7.5 minute USGS quadrangle for Bloomsburg, Pennsylvania, was reviewed in the vicinity of the project area. For more detailed topographic information, PAMAP LiDAR (2-foot Intervals) were reviewed to determine slope breaks and microtopography that could result in wetlands and/or waterways.

## 2.2 AERIAL PHOTOGRAPHY

Multiple sources of online accessible current and historical aerial imagery were reviewed. In particular, leaf-off aerial imagery was evaluated for saturation that may persist long enough into the growing season to create wetland conditions.

## 2.3 NATIONAL WETLAND INVENTORY

The U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) mapping within and surrounding the project area is presented in Figure 2 - USDA-NRCS Soils and NWI Wetlands Map. According to NWI mapping there are no NWI wetlands located within the investigation area.

## 2.4 USDA/NRCS SOIL DESCRIPTIONS

The soil associations onsite are identified through the soil map units mapped by the United States Department of Agriculture – Natural Resources Conservation Service

(USDA-NRCS) in the Soil Survey of Columbia County, Pennsylvania. In addition, the hydric soils list for Columbia County was reviewed to determine if these soils are Hydric Soils or contain Hydric Inclusion. There are 5 soil mapping units located within the investigation area. Each soil series and their hydric rating is provided in Table 2-1.

| Soil Mapping Unit | Map Unit Name | Slope (%) | Hydric Soil / Hydric Inclusion |
|---|---|---|---|
| AeB2 | Allenwood silt loam | 3 to 12 | No |
| HhB2 | Hartleton channery silt loam | 3 to 12 | No |
| HhC3 | Hartleton channery silt loam | 12 to 20 | No |
| WbB2 | Watson silt loam | 3 to 8 | Yes |
| WcC2 | Weikert channery silt loam | 12 to 20 | Yes |

Table 2-1: Soil Mapping Unit and Hydric Soils Listing

## 3.0 RESULTS

After the completion of a desktop analysis, a formal wetland delineation was completed. Areas exhibiting the potential for regulated wetlands and waters were evaluated to determine whether they satisfied the USACE and/or PADEP requirements. There were no wetlands or streams identified during the delineation. Site specific information, including mapping, photographic documentation and data forms, is provided in Attachment A.

## 4.0 CONCLUSIONS

No wetlands or streams were identified during the delineation within the investigation area. If the Project area is expanded upon, additional delineations would be required.

## 6.0 REFERENCES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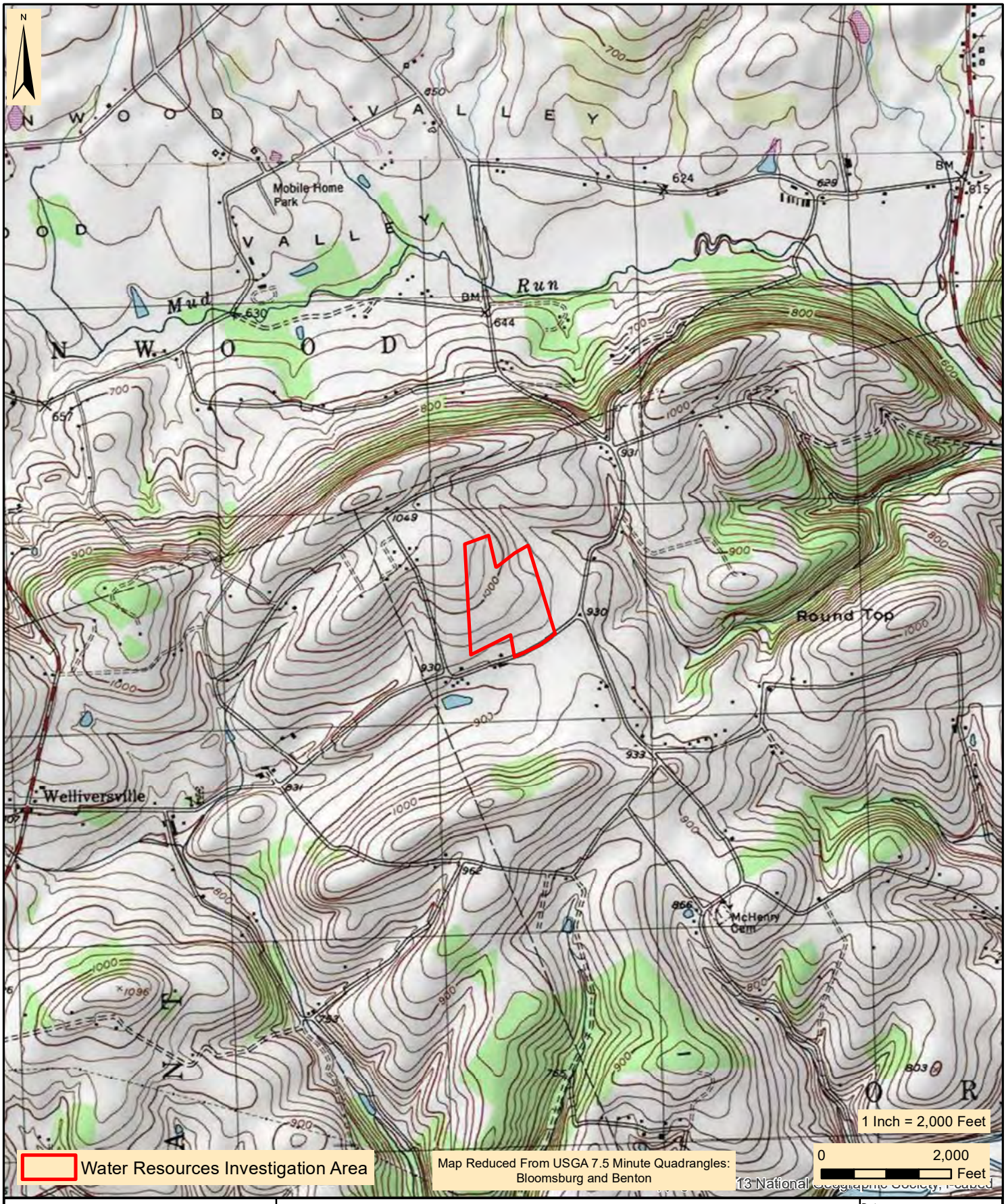
FIGURES

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**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**

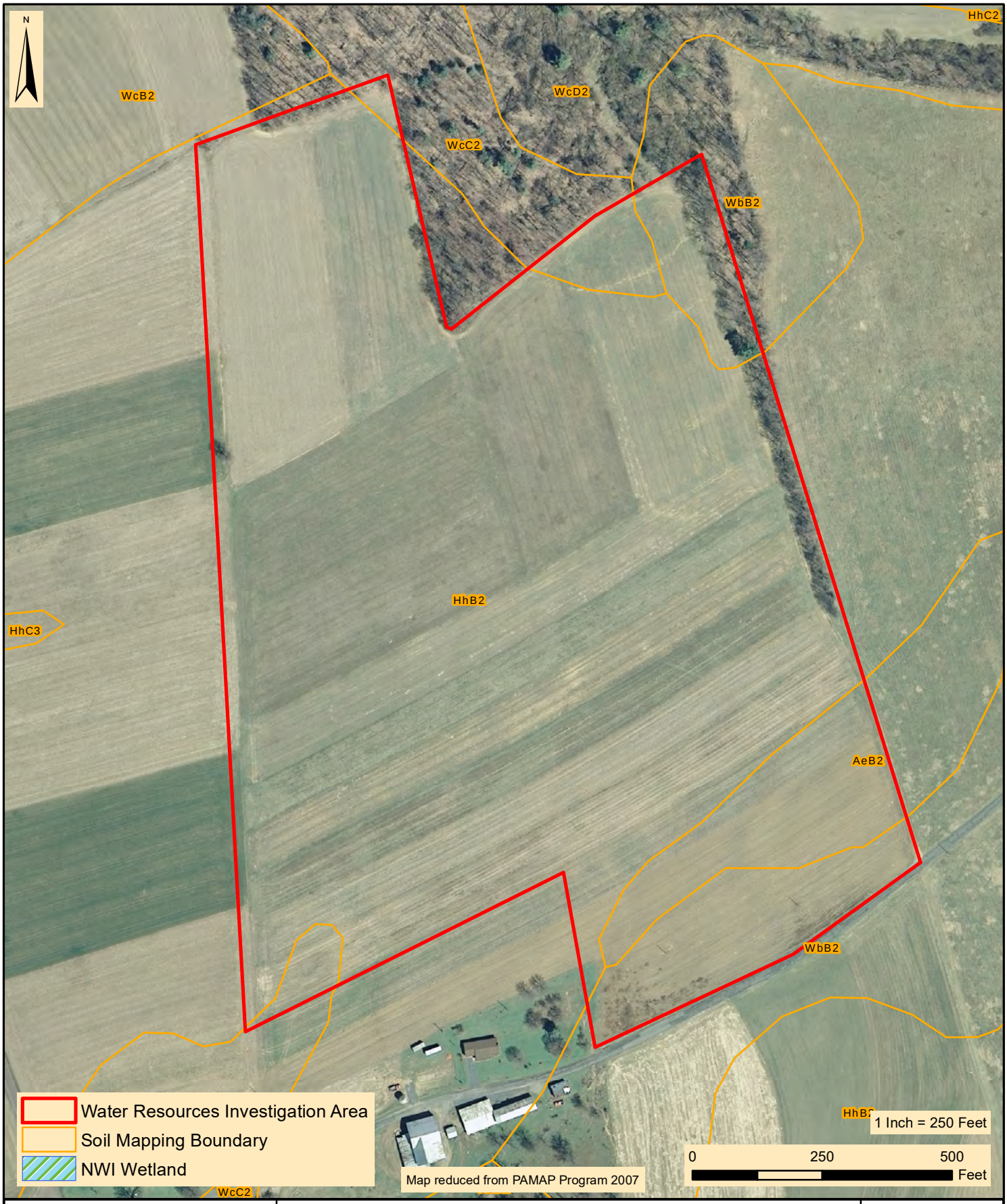
LEIDY SOUTH PROJECT

COMPRESSOR STATION 610

PROJECT LOCATION MAP

ORANGE TOWNSHIP | COLUMBIA COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 10/10/2019 |
| WHM Drawing Number: | WILLIAMS205A001 |
| Drawn By: | DMW |
| Figure Number: | 1 |

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**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**

LEIDY SOUTH PROJECT

COMPRESSOR STATION 610

USDA-NRCS SOILS AND NWI WETLANDS MAP

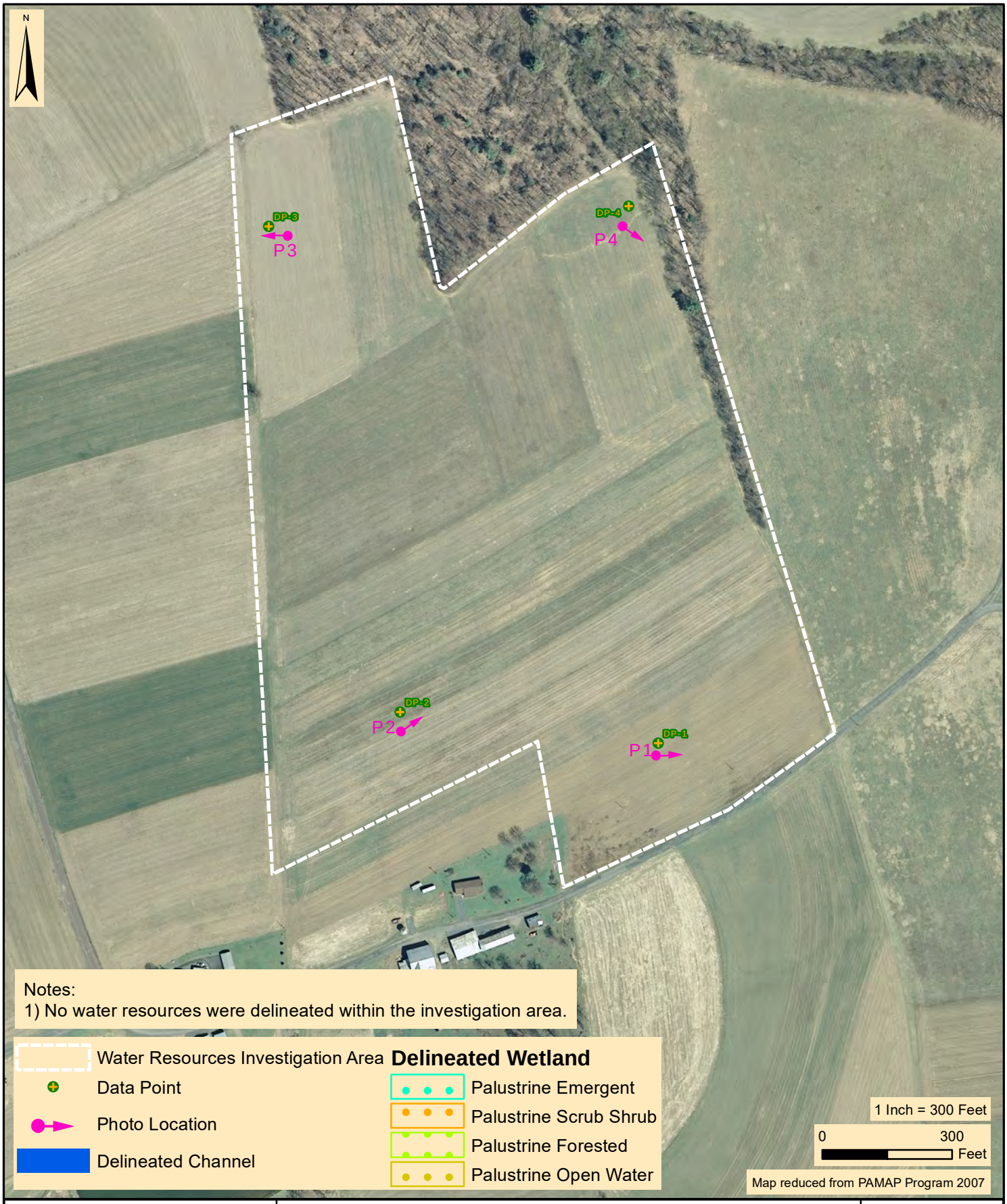
ORANGE TOWNSHIP | COLUMBIA COUNTY | PENNSYLVANIA

| | |
|---|---|
| Date: | 10/10/2019 |
| WHM Drawing Number: | WILLIAMS205A002 |
| Drawn By: | DMW |
| Figure Number: | 2 |

ATTACHMENT A

WETLAND AND WATER RESOURCE DELINEATION DATA PACKAGE

WATER RESOURCES DELINEATION MAP

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**TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**
LEIDY SOUTH PROJECT
COMPRESSOR STATION 610

WETLAND DELINEATION & PHOTO LOCATION MAP

ORANGE TOWNSHIP COLUMBIA COUNTY PENNSYLVANIA

| | |
|---|---|
| Date: | 10/10/2019 |
| WHM Drawing Number: | WILLIAMS205A003 |
| Drawn By: | DMW |
| Figure Number: | 3 |

# PHOTOGRAPHIC DOCUMENTATION

**ID:** Photo 1

**Date:** 4/12/2019

**Taken by:** JH

**Comments:** This photo shows an eastern view of the DP 1, located in an upland hayfield.

**ID:** Photo 2

**Date:** 4/12/2019

**Taken by:** JH

**Comments:** This photo shows a view northeastern view of DP 2, located in an upland fallow area of a field.

**ID:** Photo 3

**Date:** 4/12/2019

**Taken by:** JH

**Comments:** This photo shows a western view of DP 3. The area had been recently disturbed and hydroseeded.

**ID:** Photo 4

**Date:** 4/12/2019

**Taken by:** JH

**Comments:** This photo shows a southeastern view of DP 4, located within an upland hayfield.

# WETLAND, UPLAND, AND WATERWAYS DATA FORMS

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 610 City/County: Columbia County Sampling Date: 04/12/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point Up1-T1-CS610

Investigator(s): JH, CG Section, Township, Range: Orange Township

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): none Slope (%): 3-5%

Subregion (LRR or MLRA): LRR R Lat.: 41.104811 Long.: -76.447639 Datum: NAD 83

Soil Map Unit Name: Allenwood silt loam (AeB2) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up1-T1-CS610

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dactylis glomerata* | 75 | Yes | FACU |
| 2 *Plantago laceolata* | 15 | No | UPL |
| 3 *Schizachyrium scoparium* | 5 | No | FACU |
| 4 *Trifolium pratense* | 5 | No | FACU |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 95 | x 4 = | 380 |
| UPL species | 5 | x 5 = | 25 |
| Column totals | 100 (A) | | 405 (B) |

Prevalence Index = B/A = 4.05

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** Up1-T1-CS610

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | silt | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 610 City/County: Columbia County Sampling Date: 04/12/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point Up2-T1-CS610

Investigator(s): JH, CG Section, Township, Range: Orange Township

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 5-10%

Subregion (LRR or MLRA): LRR R Lat.: 41.105032 Long.: -76.449796 Datum: NAD 83

Soil Map Unit Name Hartleton channery silt loam (HhB2) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N , soil N , or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N , soil N , or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up2-T1-CS610

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Rubus sp.* | 15 | N/A | - |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 15 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dactylis glomerata* | 35 | Yes | FACU |
| 2 *Setaria italica* | 30 | Yes | UPL |
| 3 *Trifolium pratense* | 15 | No | FACU |
| 4 *Rumex crispus* | 10 | No | FAC |
| 5 *Lepidium latifolium* | 10 | No | FAC |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 50 | x 4 = | 200 |
| UPL species | 30 | x 5 = | 150 |
| Column totals | 100 (A) | | 410 (B) |

Prevalence Index = B/A = 4.10

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** Up2-T1-CS610

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/4 | 100 | | | | | silt | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 610 City/County: Columbia County Sampling Date: 04/12/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point Up3-T1-CS610

Investigator(s): JH, CG Section, Township, Range: Orange Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR or MLRA): LRR R Lat.: 41.108123 Long.: -76.45084 Datum: NAD 83

Soil Map Unit Name: Hartleton channery silt loam (HhB2) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes ___ No X

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present? Yes ___ No X Depth (inches): ___

Water table present? Yes ___ No X Depth (inches): ___

Saturation present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

**Wetland hydrology present?** Yes ___ No X

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up3-T1-CS610

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 0 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 0 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column totals _____ (A) _____ (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** Up3-T1-CS610

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12" | 10YR 4/3 | 100 | | | | | gravelly silt | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes _____ No X

Remarks:

## WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Compressor Station 610 City/County: Columbia County Sampling Date: 04/12/2019

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point Up4-T1-CS610

Investigator(s): JH, CG Section, Township, Range: Orange Township

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Convex Slope (%): 5-10%

Subregion (LRR or MLRA): LRR R Lat.: 41.108216 Long.: -76.447816 Datum: NAD 83

Soil Map Unit Name: Watson silt loam (WbB2) NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X No ___ (If no, explain in remarks)

Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal circumstances" present? Yes X No ___

Are vegetation N, soil N, or hydrology N naturally problematic? (If needed, explain any answers in remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | |
|---|---|
| Hydrophytic vegetation present? No<br>Hydric soil present? No<br>Wetland hydrology present? No | **Is the sampled area within a wetland?** Yes ___ No X |
| Remarks: | |

### HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

| | | | | |
|---|---|---|---|---|
| Surface water present? | Yes ___ | No X | Depth (inches): ___ | |
| Water table present? | Yes ___ | No X | Depth (inches): ___ | **Wetland hydrology present?** Yes ___ No X |
| Saturation present? (includes capillary fringe) | Yes ___ | No X | Depth (inches): ___ | |

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** - Use scientific names of plants

**Sampling Point:** Up4-T1-CS610

| Tree Stratum (Plot Size:_____30'____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Sapling/Shrub Stratum (Plot Size:____15'____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| | 0 = | Total Cover | |

| Herb Stratum (Plot Size:_____5'_____) | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 *Dactylis glomerata* | 80 | Yes | FACU |
| 2 *Taraxacum officinale* | 10 | No | FACU |
| 3 *Trifolium pratense* | 5 | No | FACU |
| 4 *Plantago lanceolata* | 5 | No | UPL |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| | 100 = | Total Cover | |

| Woody Vine Stratum (Plot Size:_____30'_____ | Absolute % Cover | Dominant Species | Indicator Staus |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| | 0 = | Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | 95 | x 4 = | 380 |
| UPL species | 5 | x 5 = | 25 |
| Column totals | 100 (A) | | 405 (B) |

Prevalence Index = B/A = 4.05

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid test for hydrophytic vegetation

___ 2 - Dominance test is >50%

___ 3 - Prevalence index is ≤3.0*

___ 4 - Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ 5 - Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Hydrophytic vegetation present?** Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

**Sampling Point:** Up4-T1-CS610

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (Inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8" | 10YR 4/4 | 100 | | | | | silt | |
| 8-12" | 10YR 5/4 | 100 | | | | | silt | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

**Hydric soil present?** Yes ____ No X

Remarks: