ATTACHMENT A-4
DELAWARE RIVER REGULATOR

Science Collaborating with Business
for Better Environmental Solutions

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

REGIONAL ENERGY ACCESS EXPANSION PROJECT

WETLAND AND WATERCOURSE DELINEATION REPORT

LUZERNE, MONROE, BUCKS, CHESTER, AND NORTHHAMPTON COUNTIES, PENNSYLVANIA

FEBRUARY 2021

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WETLAND DELINEATION REPORT

1.0 INTRODUCTION

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing the Regional Energy Access Expansion Project (Project) which is an expansion of Transco's existing natural gas transmission system. This report summarizes the results of the wetlands and watercourse delineations (delineations) completed for the Project in Luzerne, Monroe, Bucks, Chester, and Northampton counties, Pennsylvania by WHM Consulting, LLC. (WHM). Appendix A to this report shows the overall Project location map showing each of the Project components.

Wetland delineations were completed on the Project between March of 2020 and November of 2020. Resumes of the staff present during the delineations can be found in Appendix B. In 2020, site visits to review the wetland boundaries at various locations was completed with the United States Army Corps of Engineers (USACE) as part of the preliminary jurisdictional determination (pre-JD) associated with the Project. The Philadelphia district reviewed the Effort Loop, and the eastern portion of the Regional Energy Lateral within the Philadelphia USACE district on August 11th,2020 and August 12th, 2020. The Baltimore district reviewed western portion of the Regional Energy Lateral within the Baltimore USACE district on August 25th,2020 and August 26th, 2020. The section of the Regional Energy Lateral from Bald Mountain Access Road to Hildebrandt Road is the only pipeline portion of the project within the Baltimore USACE district. Compressor Station 195 is also within the Baltimore USACE District. The Effort Loop, Compressor Station 200, Delaware Regulator, Main Line A Regulator, and the eastern portion of the Regional Energy Lateral from Compressor Station 515 to Bald Mountain Access Road are within the Philadelphia USACE district.

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: Effort Loop Wetland and Watercourse Delineation Report (Omitted);
Appendix D: Regional Energy Lateral Wetland and Watercourse Delineation Report (Includes Compressor Station 515) (Omitted);
Appendix E: Compressor Station 200 Wetland and Watercourse Delineation Report (Omitted);
Appendix F: Delaware Regulator Wetland and Watercourse Delineation Report;
Appendix G: Main Line A Regulator Wetland and Watercourse Delineation Report (Omitted);

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, watercourses likely to be regulated as Waters of the United States, including ephemeral, intermittent and perennial watercourses, 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 waterway type (perennial, intermittent or ephemeral) is noted on the stream data form completed for each delineated water resource. Watercourses 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) was 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.

For delineations performed in the Commonwealth of Pennsylvania, wetlands and watercourses 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. For this project a preliminary jurisdictional determination was completed by the USACE.

Wetlands and waterways were surveyed by WHM with a hand-held Spectra SP20 GPS, which is capable of delivering sub-meter accuracy. 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 Transco surveyors then provided the surveyed data back to WHM for incorporation into the project mapping and the wetland delineation report.

4.0 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.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 016-30: 1-17. Published 28 April 2016. ISSN 2153 733. http://wetland-plants.usace.army.mil/nwpl_static/v33/home/home.html

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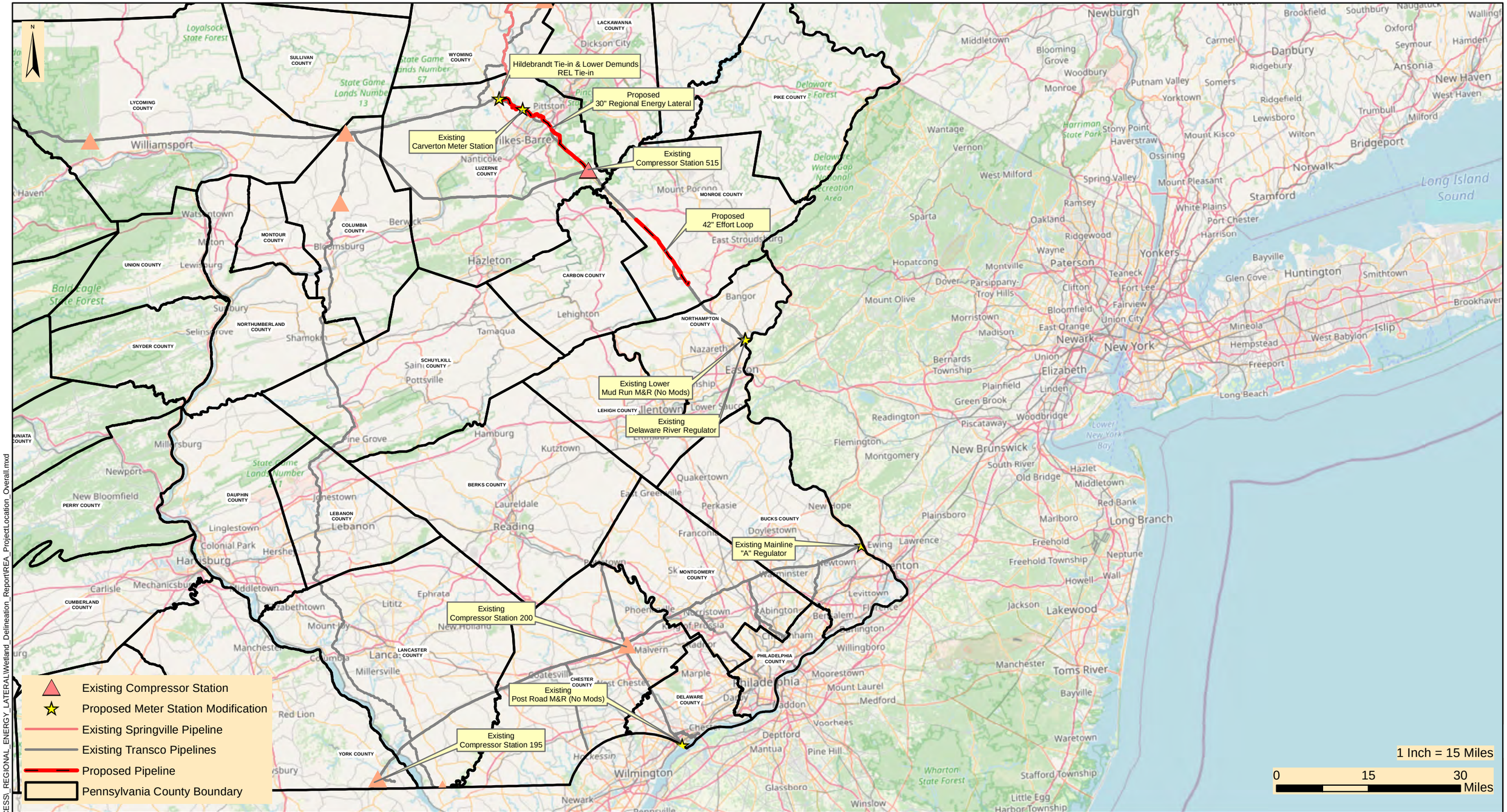
United States Fish and Wildlife Service. National Wetland Inventory Map, 7.5 Minute Series, Pennsylvania.

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 3/2020 through 10/2020.

APPENDIX A

OVERALL PROJECT LOCATION MAP



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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

REGIONAL ENERGY ACCESS EXPANSION PROJECT

OVERALL PROJECT LOCATION MAP- PENNSYLVANIA

PENNSYLVANIA

Date: 2/2/2021

Drawn By: FTN

Figure Number: 1

APPENDIX B

RESUMES

Ryan Nelson, PWS, Senior 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 and 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

David Wood, PWS, Environmental Specialist

Education

- *B.A., Environmental Studies, The Pennsylvania State University, 2010; Minor in Biology*

Certifications

- *Professional Wetland Scientist (PWS) PWS Seal # 2903*
- *PA DCNR Wild Plant Management Permit #19-658*

Professional Training

- *PADEP Technical Workshops – Prepare for The New Aquatic Resource Condition Assess. (Ch. 5) – June 2017*
- *The Wetland Training Institute – Planning Hydrology, Vegetation, & Soils Constructed Wetlands – July 2016*
- *Swamp School Field Identification of Wetland Sedges, Grasses and Rushes – June 2016*
- *PA Botany Steering Committee – A Consulting Botanist's Toolkit – Dec. 2015*
- *The PNPS – Identification of Grasses, Sedges, and Rushes – July 2015*
- *SWS Mid-Atlantic Chapter Wetland Mitigation, Restoration and Ecology - PA – Apr. 4-5, 2014*
- *PNDI Updates Presentation, PA – Dec. 2013*
- *FERC "Environmental Review and Compliance for Natural Gas", TX – Sept. 2013*
- *PADEP ESCGP-2 Training, PA - July 2015*
- *PASFI® Training: Prof. Timber Harvesting Ess., Wildlife-Young Forest Initiative, Game of Logging, Lev 1 – May 2012*
- *Marcellus Workshop "An Update on PHMSA Pipeline Regulations & Act 127" – Feb 2012*
- *PASPGP-4 Workshop: ACE, Baltimore District– Oct. 2011*
- *Regional Supplement to USACE Delineation Manual, PA – M.N. Gilbert Environmental – Apr. 2011*
- *Ohio Rapid Assessment Method for Wetland v. 5.0 2014 Training Course – April 2015*
- *38-Hour ACOE Wetland Delineation/Waters of the US Training, Richard Chinn – March 2014*

David Wood has more than 8 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.

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;
- Conducted water quality analysis's including macroinvertebrate sampling and identification; and
- Performed forest inventory and assessments.

Water Resource Projects

- Performed wetland and water resource delineations 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;
- Completed local, state and federal environmental permitting for various types of development and water quality improvement projects;
- Performed Erosion and Sediment control inspections on gas well sites and pipeline right-of-way's;
- Assisted with a variety of environmental permitting projects; and

Equipment and Mapping

- Performed task utilizing Trimble GPS equipment;
- Utilized GIS software for mapping and data analysis:
- Performed land analysis utilizing GIS software for determining suitable areas for development; and
- Used survey equipment to characterize pre and post construction conditions for mapping and design purposes on stream and wetlands for various projects.

Kevin M. Clark (PWS) Senior Project Manager / Office Manager

Professional Trainings

- *2020 NPDES Workshop – Monroe & Pike County Conservation Districts - Feb 2020*
- *Southern Gas Association (SGA) Technical Conference on Environmental Permitting & Construction, Savannah, GA – Feb 2020*
- *PADEP Technical Workshops - Prepare for The New Aquatic Resource Condition Assessments (Ch. 105) – June 2017*
- *Federal Energy Regulatory Commission (FERC) Environmental Seminar, Marcellus Shale Coalition, State College, PA – May 2017*
- *PASPGP-5 Training, Marcellus Shale Coalition, Hershey PA – July 2016*
- *National Mitigation & Ecosystem Banking Conference, Fort Worth, TX – May 2016*
- *Chapter 102/NPDES Training Centre & Clinton County Conservation Districts – March 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*
- *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 2012*
- *Erosion & Sediment (E&S) Manual Training (Northampton Co) by the PACD in conjunction PADEP – August 2012*
- *Primary Headwater Habitat Assessment Training – West Woods Metro Park, Geauga County, Ohio – May 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*

Kevin Clark is a Professional Wetland Scientist that has extensive experience with wetland delineation and evaluation, permitting, mitigation design, and the preparation of environmental compliance documents in accordance with national, state, and local criteria and guidelines. Mr. Clark has extensive experience in obtaining NPDES (Chapter 102) and Water Obstruction and Encroachment (Chapter 105 / Section 404) permits including associated field survey and managing turn-key wetland and stream mitigation projects. Mr. Clark serves as liaison in the collaborative design process, bringing together clients, engineers, ecologists and regulatory agencies to optimize proposed development.

Education

- Bachelor of Arts, Division of Mathematics and Natural Sciences, Environmental Studies, The Pennsylvania State University, University Park, December 2006.

Professional Certifications

- Professional Wetlands Scientist (PWS), License Number: 2285, November 2012 Society of Wetland Scientists Professional Certification Program, Inc.

Professional Experience

- Project Management of land development projects requiring local, state (Chapter 102, 105 & 401) and federal (Section 404) permit authorizations with an emphasis large linear projects, energy related infrastructure, landfills, abandoned mine restoration, and wetland/stream mitigation;
- Served as client and regulatory liaison for projects involving land development and environmental restoration;
- 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;
- Completing Pennsylvania Natural Diversity Index (PNDI) Environmental Reviews including management of time-sensitive threatened and endangered species;
- Oversaw subconsultants performance and reviewed reports for archeological surveys, Phase I Environmental Site Assessments, threatened and endangered species, and post-construction stormwater management design;
- Completed Environmental Assessments for projects with water resource impacts;
- Proficient in providing detailed mapping and design drawings utilizing AutoCAD and ArcGIS software;
- Responsible for property acquisition, design, permitting, cost estimates, construction, and post-construction monitoring for over 20 water resource mitigation projects; and
- Prepared bids and proposals for variety of development projects.

Health and Safety Certifications / Trainings

- OSHA 40-Hour HAZWOPER Training & 8-Hour Refresher – December 2019
- Safeland Training – June 2017 and September 2016
- Adult First Aid/CPR– American Heart Association, Pennsylvania – December 2018

Jim Haney, PWS, Project Manager

Education

- *B.S., Environmental Resource Management, The Pennsylvania State University, 2008*

Certifications

- *Professional Wetland Scientist (PWS) PWS Seal # 2509*

Professional Training

- *Society of Wetland Scientists Annual Meeting – Baltimore, MD – May 2019*
- *PADEP Technical Workshops – Prepare for The New Aquatic Resource Condition Assessments (Ch. 5) – June 2017*
- *Applied Fluvial Geomorphology Wildland Hydrology, Sheperdstown, WV – April 2016*
- *USACE & PADEP "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 of 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, Pennsylvania – April 2010*

Jim Haney has over 10 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) who manages wetland delineations, permit preparation, post-construction monitroing, and agency coordination for projects for WHM.

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.

Lastly, Jim serves on the Society of Wetland Scientists Professional Certification Program (SWSPCP) where he reviews applications submitted for professional certificaiton.

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 and mitigation projects;
- Utilizes GIS mapping software to evaluate project sites, manage environmental field data, and produce mapping for various 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 several 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 numerous stream restoration and wetland mitigation projects;
- Has performed and oversaw the performance of 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.

Paul Fisher, PWS, Project Manager, Health and Safety Officer

Education

- *B.S., Environmental Soil Science, The Pennsylvania State University, 2009*

Certifications

- *Professional Wetland Scientist (PWS) PWS Seal # 2560*
- *Southwestern Energy (SWN) Training Assurance Program(TAP) Instructor Certification – October 2013*
- *Occupational Safety and Health Professional Certification – May 2012*

Professional Training

- *2014 ABE Safety Expo – OSHA & Job Site Safety Training – January 2014*
- *NCCER Performance Verifications – February 2013 – PV151 15.1; PV152 15.2; PV320 32.0*
- *AOCFG – Abnormal Operating Conditions – Field NCCER – September 2013*
- *Custom Pipeline Inspector NCCER – September 2013 – Task 15, 15.1, 15.2 and 32*
- *PA DEP ESCGP-2 Training, State College, PA – July 2013*
- *OSHA 40 Hour HAZWOPER Training: Allprobe Environmental – July 2013*
- *E&S Manual Training – Association of Conservation Districts, Scranton, PA – May 2013*
- *Hydric Soil Indicators Field Seminar – PA Association of Professional Soil Scientists – Wysox, PA – April 2013*
- *Williams Contractor Safety – May 2012*
- *First Aid/CPR; Emergency Care & Safety Institute – May 2012*
- *Primary Headwater Habitat Assessment Training – Geauga County, Ohio 2012*
- *132 Hour Occupational Safety and Health Professional Training – OSHA Academy – May 2012*
- *"Planning Hydrology for Constructed Wetlands", Wetland Training Institute – State College, PA – November 2011*
- *"Grasses, Sedges, and Rushes" Pennsylvania Institute for Conservation Education – Huntingdon, PA – August 2011*
- *Hydrology of Wetlands Rutgers University – New Jersey – May 2011*
- *"Functional Assessment as the Basis for Mitigation of Wetland Impacts – Overview and Discussion, State College, PA – M.N. Gilbert Environmental – April 2011*
- *ACOE Wetland Delineation/Regional Supplemental Training Richard Chinn Environmental Training – State College, PA – March 2010*

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 projects and field crews for WHM. Mr. Fisher is also the Health and Safety Officer for WHM in which he oversees and implements the corporate Health and Safety Plan. Mr. Fisher has over 10 years of professional expereince with Project Manangement, GIS Analysis and Mapping, environmental permitting, wetland delineations, stream assessments, pipeline routing, wetland mitigation, functional assessments, ORAM, riparian planting, project management and oversite.

Professional Experience

General Environmental Projects

- Managed different environmental projects in Pennsylvania, Maryland and Ohio.
- 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;
- 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.

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 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.
-

Health and Safety Experience

- Developed Site Health and Safety Plans for several projects in difference industries.
- Completes Hazard Assessments for all WHM projects.
- Implements the WHM Corporate Health and Safety Plan.
- Overseas all Health and Safety training and record keeping.
- Overseas and conducts company Health and Safety Trainings
- Manages the WHM ISNET world and PEC Safety Compliance Pro accounts.

Frank Norris, CAD/GIS Technician

Education

- *B.S., Geography (Environmental Science Concentration), Mansfield University of Pennsylvania, 2011*
- *Minor in Geology*

Certifications

- *NASSCO PACP/LACP & MACP Certification*

  Certification # U-1116-07005878

Professional Training

- *OSHA 40 Hour HAZWOPER Training: Compliance Solutions, - November 2019*
- *First Aid/CPR/AED Certification- Heartsaver – September 2019*
- *ESRI 8.0 hour Remote Sensing Training – May 2013*
- *ESRI 8.0 hour Geodetic Awareness Training – May 2013*
- *ESRI Intermediate GIS Concepts Training – October 2013*
- *ESRI ArcGIS for Petroleum Training – October 2012*
- *Regional Supplement to USACE Delineation Manual, PA – MN Gilbert Environmental – April 2011*

Frank Norris is a professional environmental scientist and cartographer with 10 years of experience in mapping and database management programs including ESRI ArcMap, AutoCAD Civil 3D, InfoNet, and EqUIS Database systems. In addition to his experience as a cartographer, he has experience with environmental monitoring, permitting, and performing wetland delineations all in accordance with national, state, and local criteria and guidelines. Mr. Norris graduated in 2011 from Mansfield University with a degree in Geography with a concentration in Environmental Science. Since graduation, he has been associated with various projects and has gained skills through his previous experiences in various industries such as Oil and Natural Gas Exploration, Transportation , Real Estate Development, and Public Infrastructure projects pertaining to wastewater and stormwater systems. Mr. Norris is also a skilled team leader with previous experience improving systems and workflows while communicating initiatives and technicial concepts to project stakeholders, senior project management, and junior staff memebers.

Professional Experience

Mapping and Surveying

- Plan, design, draft and analyze topographic plans and details using AutoCAD Civil 3D 2019 for various projects utilizing field collected data and other associated data
- Organized plotting and locating over 200k acres of Legacy Oil and Gas leases using AutoCAD Civil 3D
- 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
- Updated, configured, and tested files to perform SDE synchronization within InfoNet databases, leading to streamlined engineering and GIS teams utilizing up to date resources
- Developed and initiated web mapping interface for over 250 miles of municipal owned wastewater collection lines and associated documentation
- Collaborated on CCTV and GPS field collection surveys with field mapping and electronic deliverables provided to field crews and client leadership
- Developed mapping and data summary tables for Oil and Gas Pad restoration and extension packages to be submitted to PA DEP

Wetland and Stream Projects

- 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;
- Performed wetland and stream delineations in Pennsylvania, Ohio, and New York
- Performed wetland monitoring and maintenance on mitigation wetland sites
- Led wetland delineation team to complete seismic survey of property and rerouting of seismic equipment when necessary
- Collected water samples and water quality data.

Equipment and Mapping

- Performed mapping tasks and collection of field data utilizing Trimble GPS surveying equipment for various types of projects
- Utilized ESRI ArcGIS and AutoCAD software for mapping and data analysis.

Curtis George, 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*
- *OSHA 8 Hour HAZWOPER Refresher Training – November 2018*
- *OSHA 8 Hour HAZWOPER Refresher Training – December 2019*

PROFESSIONAL TRAINING

- *Basic Wetland Delineation – Wetland Training Institute – Richmond, VA, November 2020*
- *Northeastern Plants of the Wetland Boundary Online – Wetland Training Institute – November 2020*
- *Stream Habitat and Measurements Techniques – National Conservation Training Center – Shepherdstown, WV, March 2017*
- *FWS Geospatial Workshop – National Conservation Training Center – Shepherdstown, 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 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.

Charly Bloom, Environmental Technician

EDUCATION

- *Environmental & Ecological Biology, Bachelor of Science, Lock Haven University, Pennsylvania, 2019.*

PROFESSIONAL TRAINING

- *OSHA 40 Hour HAZWOPER Training; AllProbe Environmental; June 2019*

Ms. Bloom is a graduate from Lock Haven University in 2019, where she was awarded a Bachelors degree in Biological Environmental and Ecological Science. Ms. Bloom is an Environmental Technician that works in the field and wetland crews for WHM.

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

Environmental Projects

- Performed wetland monitoring and maintenance on various wetlands
- Performed Stream Surveys
- Performed wetland and watercourse delineations using US Army Corps of Engineers Wetlands Delineation Manual 1987 and applicable regional supplements

Cameron Clark, Environmental Technician

Education

- *B.A., Wildlife and Fisheries Science, , The Pennsylvania State University, 2016*

Health and Safety Training

- *OHSA 40 Hour HAZWOPER Training; All Probe Environmental; April 2018*
- *OSHA 8 Hour HAZWOPER Refresher Training; All Probe Environmental; March 2019, March 2020*
- *Williams Safety Training; April 2018, May 2019*

Professional Training

- *Northeastern Plants of the Wetland Boundary Online; Wetland Training Institute 2020*
- *Basic Wetland Delineation Online with Field Practicum; Wetland Training Institute 2020*

Cameron Clark is a graduate from The Pennsylvania State University in 2016, where he was awarded a Bachelors degree in Wildlife and Fisheries Science. Mr. Clark is a certified Timber Rattlesnake Monitor of WHM. Mr. Clark has over 3 years of professional experience with handling venomous reptiles and also field experience on pipeline construction projects and wetland delineations.

Professional Experience

General Environmental Projects

- Located and removed Timber Rattlesnakes from pipeline work area;
- Used a Trimble GPS for mapping boundaries for mapping purposes;
- Participated in Phase 2 Timber Rattlesnake Den Habitat surveys;
- Conducted vegetation surveys to map forest density, and;
- Used ratio-telemetry to track Timber Rattlesnakes.

Wetland and Stream Restoration Projects

- Performed wetland monitoring and maintenance on various wetlands;
- Practiced wetland delineations using US Army Corps of Engineers Wetland Delineation Manual 1987 and applicable regional supplements;
- Helped construct dams, cross veins and mud sills to improve stream habitat for trout species;
- Delineated wetlands and water resources at several projects throughout Pennsylvania;
- Carried out small mammal surveys to predict population density;
- Completed trail reconstruction projects to improve recreational opportunities;
- Performed oversight on riparian buffer replanting plan on Atlantic Sunrise pipeline, and;
- Provided oversight for the completion of offsite compensatory wetland mitigation.

APPENDIX C

EFFORT LOOP WETLAND AND WATERCOURSE DELINEATION REPORT (OMITTED)

APPENDIX D

REGIONAL ENERGY LATERAL WETLAND AND WATERCOURSE DELINEATION REPORT (OMITTED)

APPENDIX E

COMPRESSOR STATION 200 WETLAND AND WATERCOURSE DELINEATION REPORT (OMITTED)

APPENDIX F

DELAWARE RIVER REGULATOR WETLAND AND WATERCOURSE DELINEATION REPORT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS PROJECT

APPENDIX F
DELAWARE RIVER REGULATOR
WETLAND AND WATERCOURSE DELINEATION REPORT

LOWER MT. BETHEL TOWNSHIP, NORTHAMPTON COUNTY, PENNSYLVANIA

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LOWER MT. BETHEL TOWNSHIP,
NORTHAMPTON COUNTY, PENNSYLVANIA

1.0 INTRODUCTION

WHM Consulting, LLC (WHM) was retained by Transcontinental Gas Pipe Line Company, LLC (Transco) to conduct a delineation of wetland and water resources associated with the Regional Energy Access Expansion Project – Delaware River Regulator (Project) located in Lower Mt. Bethel Township, Northampton 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 are 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 watercourses identified in the study area. The delineation was performed on April 30th, 2020 and September 29th, 2020.

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 Bangor, Pennsylvania, and National Hydrography Dataset (NHD) 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 one (1) NWI located within the investigation area. Each NWI and their wetland type is provided in Table 2-1.

Cowardin Code	Cowardin Classification
R3UBH	Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded

Table 2-1: NWI Wetland Cowardin classification and counts within the Project 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 Northampton County, Pennsylvania. In addition, the hydric soils list for Northampton County was reviewed to determine if these soils are Hydric Soils or contain Hydric Inclusions. There are five (5) soil mapping units located within the investigation area. Each soil series and their hydric rating is provided in Table 2-2.

Soil Mapping Unit	Map Unit Name	Slope (%)	Hydric Soil/ Hydric Inclusion
BkD	Berks-Weikert complex	15 to 25	Yes
DvC	Duffield-Ryder silt loam	8 to 15	Yes
Ho	Holly silt loam	0 to 3	Yes
PQ	Pits, quarry	-	No
WaC	Washington Silt Loam	8 to 15	No

Table 2-2: Soil Mapping Unit and Hydric Soils Rating for the Project investigation area

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 following sections provide a brief summary of the resources identified within the investigation area.

3.1 WETLANDS

No wetlands were identified during the delineation.

3.2 WATERWAYS

One watercourse was identified during the delineation. It flows through a concrete culvert below an access road. Approximately 5,479 square feet of perennial channel were identified within the Project area.

4.0 CONCLUSIONS

Based on the results of the field investigation no wetland area and 5,479 square feet of watercourses 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. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

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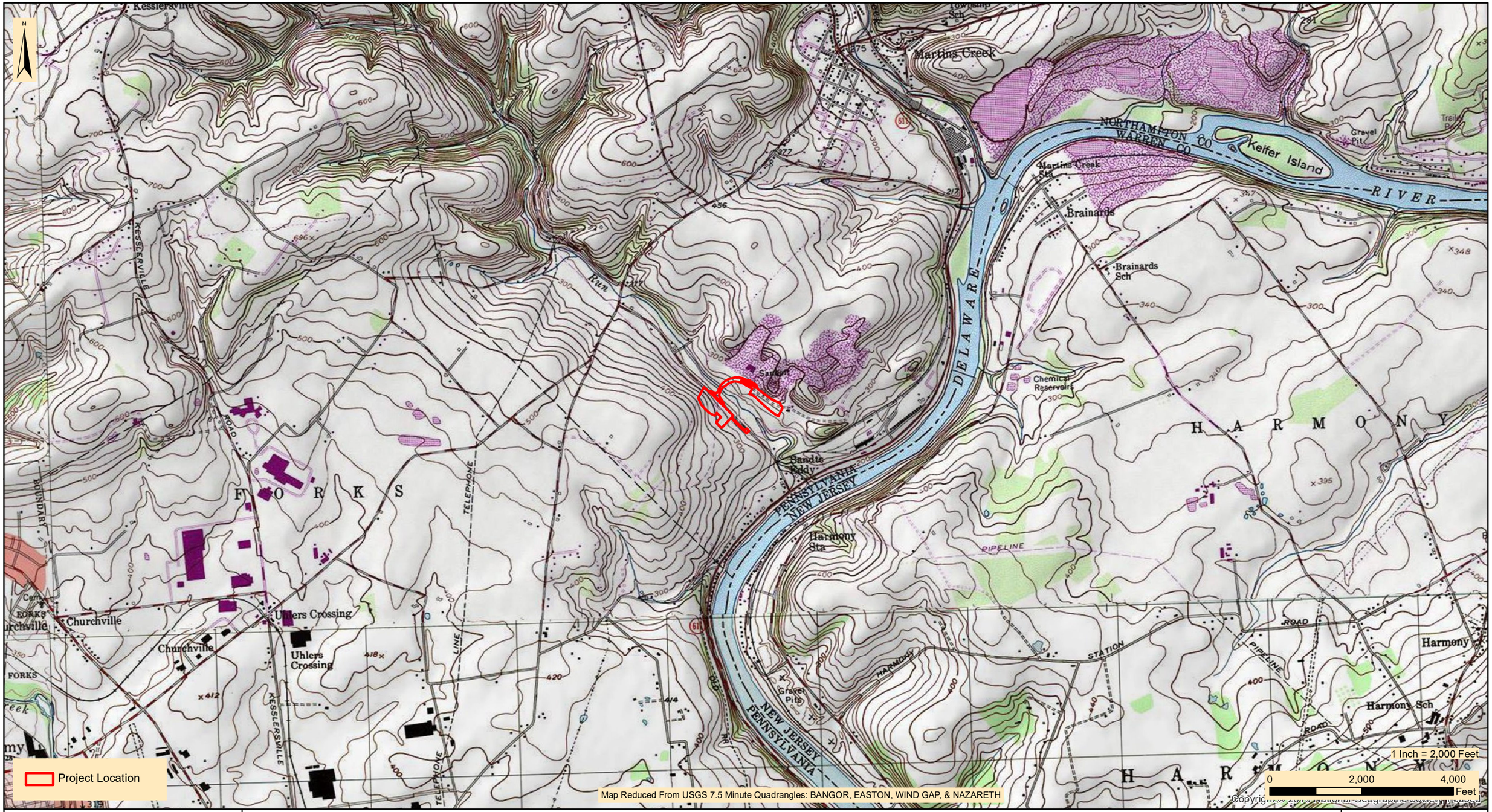
United States Geological Survey. 2018. Hydrography: National Hydrography Dataset and Watershed Boundary Dataset. http://nhd.usgs.gov/. Accessed September 3, 2020.

FIGURES

N:\PROJECTS\REGIONAL_ENERGY_ACCESS_DELAWARE_RIVER_REGULATOR_&_LOWER_MUD_RUN_M&R\WETLAND_DELINEATION\Figure_1_Project_Location_Map.mxd



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2525 Green Tech Drive, Suite B,
State College, PA 16803
Tele: 814.689.1650 Fax: 814.689.1557

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

REGIONAL ENERGY ACCESS EXPANSION PROJECT

DELAWARE RIVER REGULATOR

PROJECT LOCATION MAP

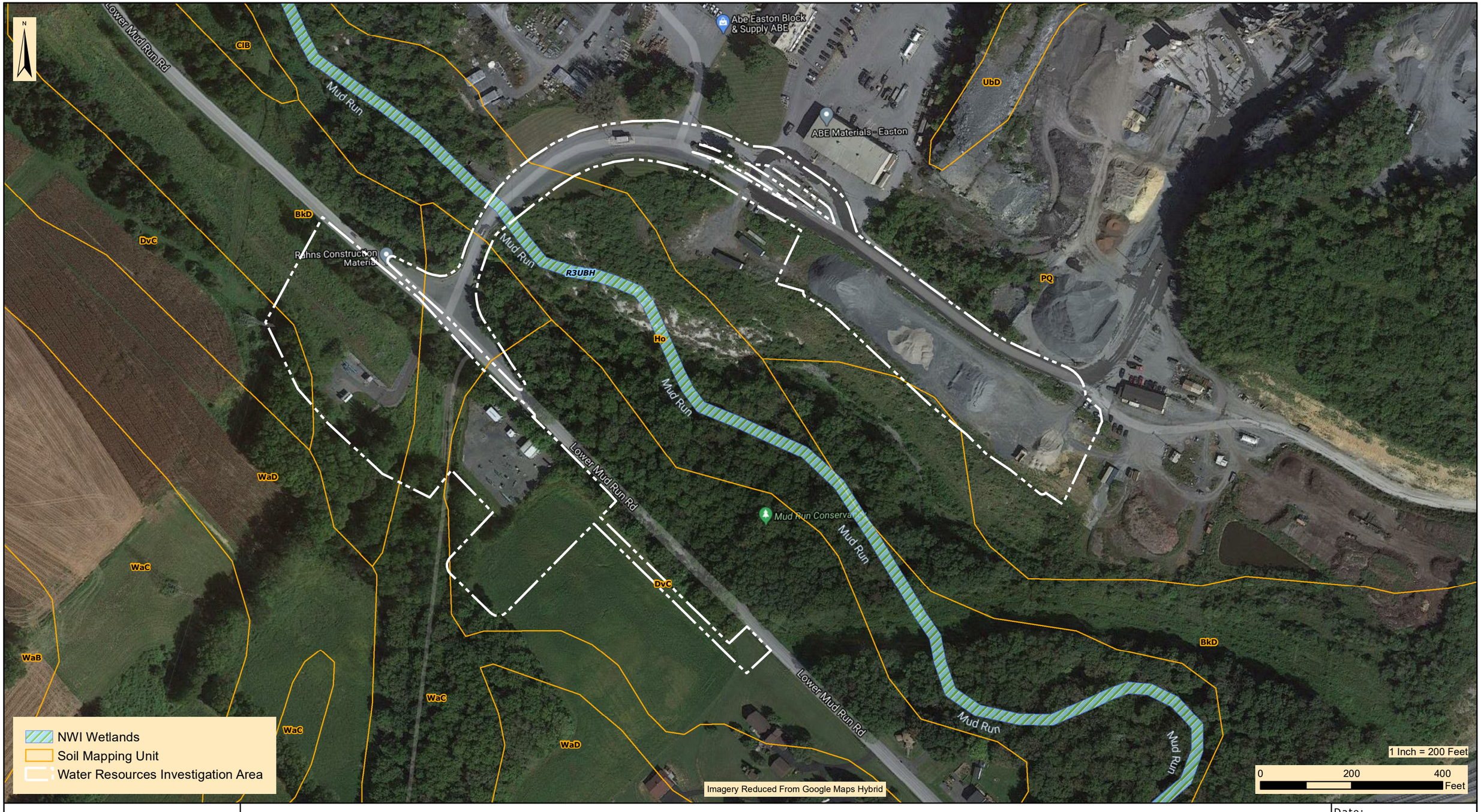
LOWER MT. BETHEL TOWNSHIP | NORTHAMPTON COUNTY | PENNSYLVANIA

Date: 1/28/2021

Drawn By: PJB

Figure Number: 1

N:\PROJECTS\REGIONAL_ENERGY_ACCESS_DELAWARE_RIVER_REGULATOR_&_LOWER_MUD_RUN_M&R\WETLAND_DELINEATION\Figure_2_Soils_NWI_Map.mxd



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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

REGIONAL ENERGY ACCESS EXPANSION PROJECT

DELAWARE RIVER REGULATOR

USDA-NRCS SOILS & NWI MAP

LOWER MT. BETHEL TOWNSHIP | NORTHAMPTON COUNTY | PENNSYLVANIA

Date: 1/28/2021

Drawn By: PJB

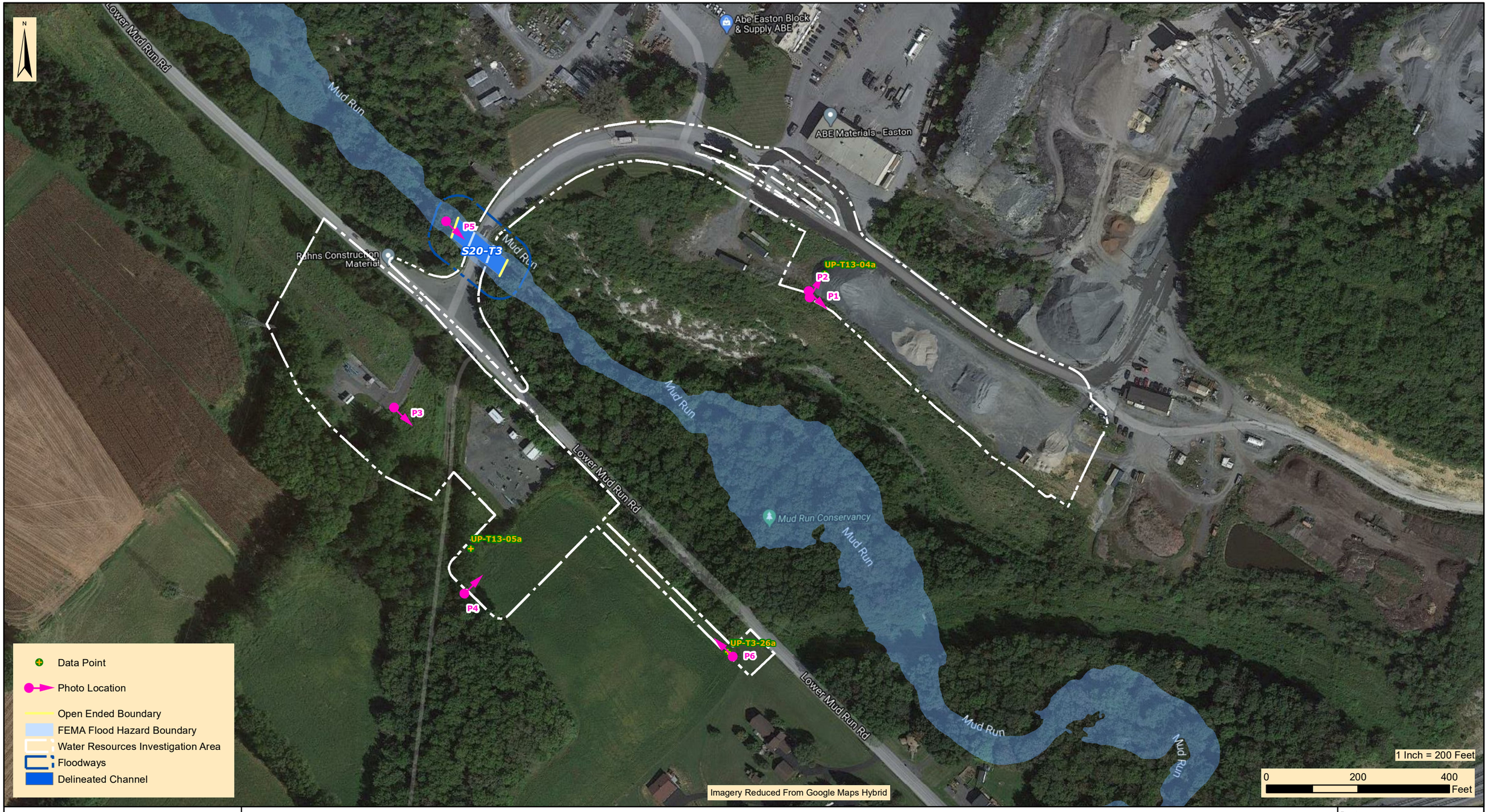
Figure Number: 2

ATTACHMENT A

WETLAND AND WATER RESOURCE DELINEATION DATA PACKAGE

WETLAND DELINEATION AND PHOTOGRAPHIC DOCUMENTATION MAP

N:\PROJECTS\REGIONAL_ENERGY_ACCESS_DELAWARE_RIVER_REGULATOR_&_LOWER_MUD_RUN_M&R\WETLAND_DELINEATION\Figure_3_Delineation_Map.mxd



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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

REGIONAL ENERGY ACCESS EXPANSION PROJECT

DELAWARE RIVER REGULATOR

WETLAND AND WATERCOURSE DELINEATION MAP

LOWER MT. BETHEL TOWNSHIP | NORTHAMPTON COUNTY | PENNSYLVANIA

Date: 2/18/2021

Drawn By: DMW

Figure Number: 3

PHOTOGRAPHIC DOCUMENTATION

ID: Photo 1

Date: 4/30/2020

Taken by: PB

Comments: This photo shows a northeast view of the investigation area near UP-T13-04a.

ID: Photo 2

Date: 4/30/2020

Taken by: PB

Comments: This photo shows a southeast view of the investigation area along its southeast boundary.

ID: Photo 3

Date: 4/30/2020

Taken by: PB

Comments:
This photo gives a southeastern view of the southern investigation area.

ID: Photo 4

Date: 4/30/2020

Taken by: PB

Comments:
This photo gives a northeastern view of the middle of the southern investigation area near UP-T13-05a.

ID: Photo 5

Date: 9/29/2020

Taken by: JH

Comments:
This photo gives a southeastern view of S20-T3.

ID: Photo 6

Date: 9/29/2020

Taken by: JH

Comments:
This photo gives a northwestern view of the east end of the southern investigation area near UP-T3-25a.

UPLAND AND WATERWAY DATA FORMS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: REA - Delaware River Regulator City/County: Northampton Sampling Date: 09/29/2020

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T3-26a

Investigator(s): JH, DT Section, Township, Range: Lower Mt. Bethel Twp

Landform (hillslope, terrace, etc.): Toe of Slope Local relief (concave, convex, none): Concave Slope (%): 0 to 3%

Subregion (LRR or MLRA): MLRA 144A Lat.: 40.760961 Long.: -75.194820 Datum: NAD 1983

Soil Map Unit Name: Duffield-Ryder silt loams (DvC) 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? N	**Is the sampled area within a wetland?** Yes ____ No X
Hydric soil present? N	
Wetland hydrology present? N	If yes, optional wetland site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.) Upload point located in an active 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)
- ___ 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

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

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: UP-T3-26a

Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
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			
	65 = Total Cover		

Herb Stratum (Plot Size: 5')	Absolute % Cover	Dominant Species	Indicator Staus
1 *Glycine max*	75	Yes	UPL
2 *Sorghum bicolor*	25	Yes	UPL
3			
4			
5			
6			
7			
	55 = 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	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

Prevalence Index = B/A = 5.00

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-T3-26a

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-3	10YR 4/4	100	-	-	-	-	SiL	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)
- ___ 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): 3"

Hydric soil present? Yes ___ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: REA - Delaware River Regulator City/County: Northampton Sampling Date: 04/30/2020

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T13-04a

Investigator(s): PB, BB Section, Township, Range: Lower Mt. Bethel Twp

Landform (hillslope, terrace, etc.): Terrace (artificial) Local relief (concave, convex, none): None Slope (%): 0 to 3%

Subregion (LRR or MLRA): MLRA 144A Lat.: 40.763214 Long.: -75.193968 Datum: NAD 1983

Soil Map Unit Name: Pits, quarry (PQ) 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 Y , or hydrology Y 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	**Is the sampled area within a wetland?** Yes ____ No X	
Hydric soil present?	N		
Wetland hydrology present?	N	If yes, optional wetland site ID: ____	

Remarks: (Explain alternative procedures here or in a separate report.) Investigation area located on recently filled area (~2015) used to stage/store gravel

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

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

Remarks: Compacted surface, likely high runoff and little infiltration

VEGETATION - Use scientific names of plants

Sampling Point: UP-T13-04a

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 *Elaeagnus umbellata*	10	Yes	FACU
2			
3			
4			
5			
6			
7			
	10 = Total Cover		

Herb Stratum (Plot Size: 5')	Absolute % Cover	Dominant Species	Indicator Staus
1 *Ambrosia artemisiifolia*	5	Yes	FACU
2 *Solidago sp.*	5	Yes	
3			
4			
5			
6			
7			
	10 = 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: 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	20	x 4 =	80
UPL species	0	x 5 =	0
Column totals	20 (A)		80

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) Herbaceous vegetation sparsely distribuated among cracks in gravel surface, with shrubs growing along edge of fill area

SOIL **Sampling Point:** UP-T13-04a

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	-	-	-	-	-	-	Gravel	Some sand packed between gravel

*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: Packed fill (gravel)

Depth (inches): Surface

Hydric soil present? Yes ___ No X

Remarks: Tightly packed gravel fill with no formed soil, some sand and smaller particles filling in between gravel. Unable to dig below 4" due to tight packing of gravel, but gravel is likely several feet deep minimum when compared with pre-fill aerial imagery (<2015)

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: REA - Delaware River Regulator City/County: Northampton Sampling Date: 04/30/2020

Applicant/Owner: Transcontinental Gas Pipe Line Company, LLC State: PA Sampling Point UP-T13-05a

Investigator(s): PB, BB Section, Township, Range: Lower Mt. Bethel Twp

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 8 to 15%

Subregion (LRR or MLRA): MLRA 144A Lat.: 40.761628 Long.: -75.196830 Datum: NAD 1983

Soil Map Unit Name: Duffield-Ryder silt loams (DvC) 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?	N	**Is the sampled area within a wetland?** Yes ____ No X	
Hydric soil present?	N		
Wetland hydrology present?	N	If yes, optional wetland site ID: ____	

Remarks: (Explain alternative procedures here or in a separate report.) Upload point located near edge of agricultural field on slope above exisiting pipeline facility

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)

- X 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

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

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: UP-T13-05a

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 *Taraxacum officinale*	20	Yes	FACU
2 *Stellaria media*	20	Yes	FACU
3 *Solidago sp.*	10	No	
4 *Myostosis sp.*	5	No	
5			
6			
7			
	55 = 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	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column totals	40 (A)		160

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-T13-05a

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-16	10YR 4/4	100	-	-	-	-	SiL	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)
- ___ 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: Soil pit located a few meters from actively farmed area but did not appear to be recently disturbed. Area was previously part of active agriculture on aerial images prior to 2004

STREAM ID: S20-T3

STREAM DATA

☐ ROW ☑ Project Facility **STATE** Pennsylvania
☐ Access Road ☐ Staging/Storage Area

County: Northampton

Stream Name: ☐ UNNAMED ☑ NAMED: Mud Run

Date: 9/29/2020

Stream Type: ☑ STREAM ☐ DITCH/CANAL

Map No. :

Observers: JH, DT

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): 40

Width (ft) (bank to bank): 40
(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): 8	Height (ft): 8
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): 3.5
*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):_____

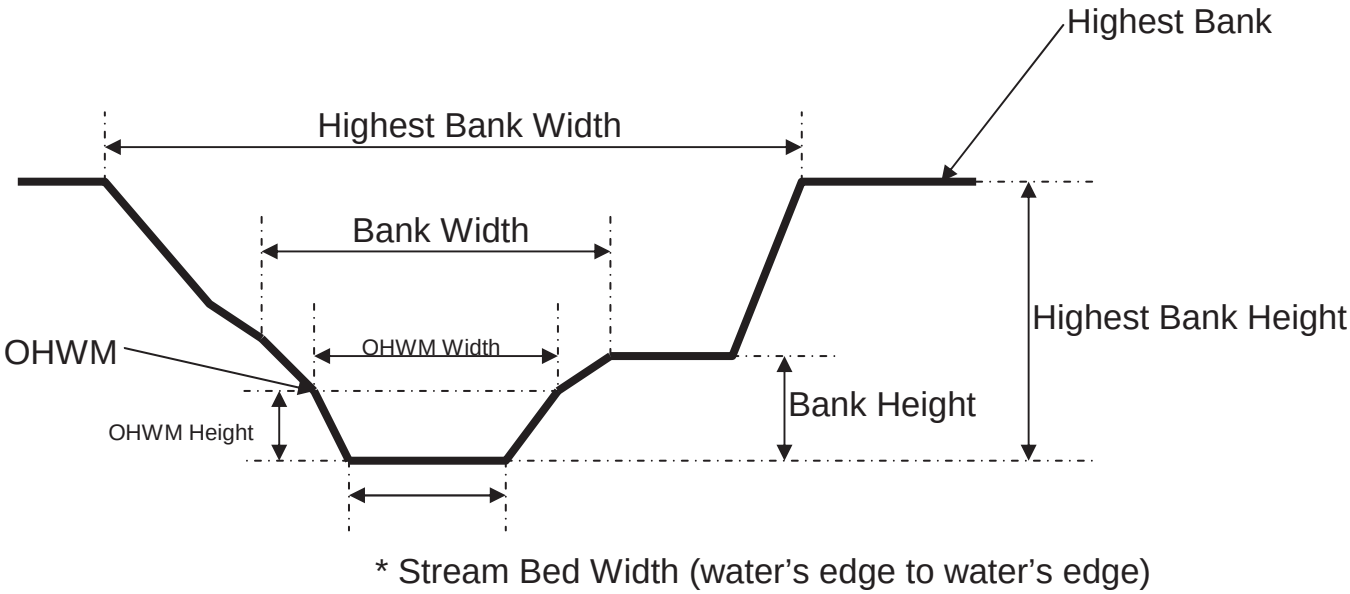
Discontinuous OHWM: ☐ yes ☑ no

Geometry: ☐ Meandering ☑ Relatively Straight

Presence of: ☑ run ☐ pools ☐ riffles
Explain:

Is the stream/tributary:
☐ natural
☐ manmade – Explain:_____
☑ man-altered – Explain: Concrete culvert under access road

NOTES:
Stream contained within double culvert beneath access road



*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.

ATTACHMENT B

WATER RESOURCE SUMMARY TABLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO)
REGIONAL ENERGY ACCESS EXPANSION PROJECT - DELAWARE RIVER REGULATOR
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	
S20-T3	Mud Run	Perennial	138	41	5,479	0.05	0.008	Yes	RPW	40.763427	-75.196686	Mud Run	CWF, MF	-	No	No	No	0-6" water depth, concrete culvert through investigation area

APPENDIX G

MAIN LINE A REGULATOR WETLAND AND WATERCOURSE DELINEATION REPORT (OMITTED)