PITT-02-19-076

February 28, 2019

Project Number 212IC-BF-00037

<u>Via E-mail and overnight Fed Ex</u>
Mr. Scott Williamson
Program Manager
Pennsylvania Department of Environmental Protection
Waterways and Wetlands Program
Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110

Re: Sunoco Pipeline L.P. – Pennsylvania Pipeline Project (Mariner East II)
Chapter 102 Permit No. ESG0300015002 – Major Modification for Horse Valley Road HDD
Modification Request for Reroute and Installation Change to Conventional Open Cut
Toboyne Township, Perry County, PA

Dear Mr. Williamson:

On behalf of Sunoco Pipeline L.P. (SPLP), please accept the enclosed revised drawings and information as a request for a major modification to the referenced Chapter 102 permit [Note – the corresponding Chapter 105 permit modification request is being provided separately under a different cover]. This modification is being requested for a change in the route and installation method for the 16-inch diameter pipeline from a Horizontal Directional Drill (HDD) to a conventional open trench installation. The reroute will require additional limit-of-disturbance (LOD).

While conducting the permitted HDD for the 20-inch pipe under a wetland/stream complex associated with the Wetland Reserve Program, a confined aquifer was encountered resulting in groundwater production within the annulus of the HDD. Therefore, in order to avoid similar problems with the 16-inch pipeline, SPLP proposes to avoid the Wetland Reserve Program wetland property, and any other wetland areas, and via a reroute to the north use an open cut method with a dam and pump bypass to install the 16-inch pipeline across the two perennial streams (S-L6 and S-Q68). The dam and pump will contain and convey stream flow across the workspace and outlet downstream within the permitted limit-of-disturbance (LOD), such that work will be conducted in a dry stream channel. After the stream bypass is in place, the trench will be excavated, and the 16-inch pipeline will be installed via the open trench method. Once the pipeline is installed, the trench will be backfilled and restored to pre-existing conditions in accordance with the enclosed plans/drawings and information.

In accordance with the Chapter 102 major permit amendment requirements, the following information is provided for your information/review and files:

- 1-NOI Check List
- 2-NOI Application
- 3-Erosion and Sediment Control Plan
- 4-Act 14 Letters
- 5-Act 167 Consistency Verification Report
- 6-PNDI

Tetra Tech
661 Andersen Drive, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

- 7-Site Restoration and Post Construction Stormwater Management Plan
- 9-Compliance History Table
- 10-Aquatic Resources Report

Enclosed are two (2) hard copies of the modification request to facilitate your review. The enclosed fee of $900 is for the processing of a Chapter 102 major modification and the additional resource impacts (Attachment H). Please note that the Perry County Conservation District will also receive a copy of this request and attachments and appropriate fees.

SPLP appreciates your timely review of this modification request. Should you have questions regarding this correspondence, please do not hesitate to contact me at 412-921-8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
Project Manager
Tetra Tech, Inc.

Enclosures: 1 original, 1 copy

cc: File 112IC05958
E. Muzic, PADEP South-central Region
A. Blosser, PADEP South-central Region
N. Imes Perry County Conservation District
M. Gordon, Sunoco Pipeline L.P.
C. Embry, Sunoco Pipeline L.P.
M. Styles, Sunoco Pipeline L.P.
L. Gremminger, Gremminger Associates, Inc.
B. Schaeffer, Tetra Tech

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PREFACE I – CONSERVATION DISTRICT APPLICATIONS, FEES, AND CHECKS

PERRY COUNTY CONSERVATION DISTRICT

Conserving Natural Resources for Our Future

CHAPTER 102 EROSION & SEDIMENTATION PLAN REVIEW
APPLICATION & FEE SCHEDULE
Effective 10/10/2016

PROJECT NAME: Pennsylvania Pipeline Project-Horse Valley Major Modification
MUNICIPALITY: Toboyne Township
TOTAL PROJECT ACRES: 3.94
TOTAL DISTURBED ACRES: 3.94
TOTAL LOTS: N/A

LOCATED IN HQ OR EV STREAM WATERSHED (page 3) YES/NO: Yes
INDIVIDUAL NPDES permit required YES/NO: N/A
GENERAL NPDES permit required YES/NO: N/A

LANDOWNER OR DEVELOPER: Sunoco Pipeline L.P.
ADDRESS: 535 Fritztown Road
CITY: Sinking Spring STATE: PA ZIP: 19608
PHONE: 610-670-3200

PLAN PREPARER: Robert Simcik
FIRM NAME: Tetra Tech, Inc.
ADDRESS: 661 Andersen Drive, Suite 200
CITY: Pittsburgh STATE: PA ZIP: 15220
PHONE: 412-921-8163

PCCD FEES:
Erosion Control Plan Review Fee (from page 2).....$ 200.00 for 0.5 mile
Correction Action Plan Review Fee (from page 2).....$
NPDES General Permit Fee $500 .....$
NPDES Individual Permit Fee $1500 (HQ and EV watershed projects).....$
TOTAL $ 200.00

CHECKS SHOULD BE MADE PAYABLE TO: **PERRY COUNTY CLEAN WATER FUND**

DEP EARTH DISTURBANCE FEE (NPDES PERMITS ONLY):
$100.00 per disturbed Acre (must round to the nearest whole acre).....TOTAL $

THIS IS A SEPARATE CHECK MADE PAYABLE TO:
COMMONWEALTH OF PENNSYLVANIA CLEAN WATER FUND

Signature of Applicant or Authorized AgentI hereby certify this plan has been prepared in accordance with State Title 25 Chapter 102 regulations.

1. NOTICE OF INTENT CHECKLIST

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF WATER PROGRAMS
OFFICE OF OIL AND GAS MANAGEMENT

NOTICE OF INTENT (NOI) ADMINISTRATIVE COMPLETENESS CHECKLIST EROSION AND SEDIMENT CONTROL GENERAL PERMIT (ESCGP-3) FOR EARTH DISTURBANCE ASSOCIATED WITH OIL AND GAS EXPLORATION, PRODUCTION, PROCESSING, OR TREATMENT OPERATIONS OR TRANSMISSION FACILITIES

Please check the following list to make sure that you have included all the required information. Place a check mark in the column provided for all items completed and/or provided. Failure to provide all of the requested information will delay the processing of the application, may preclude the use of the Expedited Review, and may result in the application being placed ON HOLD with NO ACTION, or being considered withdrawn and the application file closed.

THIS CHECKLIST MUST BE COMPLETED AND ENCLOSED WITH YOUR GENERAL PERMIT NOI

✓CHECKLIST FOR EROSION AND SEDIMENT CONTROL GENERAL PERMIT NOI

☐ **NEW NOI** ☐ **RENEWAL** ☐ **PHASED** ☒ **MAJOR MODIFICATION**

If a Renewal, Phased or Major Modification, identify ESCGP Authorization # ESG03000152002

Minor revisions are not required to be submitted to the regional office for review.

CLIENT NAME Sunoco Pipeline LP

PROJECT and PHASE NAME Pennsylvania Pipeline Project (If applicable)

				Applicant Check ✓ if Included	Official Use Only
1.	Fully completed, properly signed and notarized Notice of Intent form (1 original and 2 copies for paper application). (Not required for subsequent phases)			☒	☐
2.	Is expedited review requested? If yes, complete items (a) and (b) below. If no, proceed to section 3 of this checklist.			☐ Yes	☒ No
	a. Expedited review eligibility has been completed and determined.	Location: _____	Page: _____	☐	☐
	b. Expedited review process related questions have fully been answered.	Location: _____	Page: _____	☐	☐
3.	Complete **Erosion and Sediment Control (E&S) Plans.** (1 original and 2 copies for paper application) NOTE: Identify locations as Drawings (D), Narrative (N). (Identify Not Applicable as "N/A") The E & S Plan must contain, at a minimum, the following:			☒ Yes	☐ No
	a. Topographic Features Existing topographic features of the project site and immediate surrounding area. Include the project area outlined on an 8 ½" x 11" photocopy of the U.S.G.S. topo map area. The map must include the name of the appropriate 1:24,000 scale U.S.G.S. 7.5 minute series quadrangle map where the project is located.	Location: Section 3; N	Page: Attachment 1	☒	☐
	b. Soil Characteristics Types, depth, slope, locations and limitations of the soils including methods for resolution of all soil limitations.	Location: Section 3; N	Page: Attachment 5	☒	☐
	c. Earth Disturbance Activity The characteristics of the earth disturbance activity, including the past, present and proposed land uses and proposed alteration to the project site.	Location: Section 3; N	Page: 1-1	☒	☐
	d. Project Site Runoff The Volume and rate of runoff from the project site and its upstream watershed area. Runoff impact analysis on downstream watercourse, design computations for protective measures if applicable, discharge analysis for non-surface water discharges.	Location: Section 3; N	Page: 2-3	☒	☐

	e.	**Surface Water Classification** The Location of all surface waters of this Commonwealth which may receive runoff within or from the project site including their classification under Chapter 93 and status as siltation-impaired water. All streams, springs, wetlands, and floodways within, adjacent or receiving water from the project site must be shown on drawings with proper identification of special protection waters and existing uses.	Location: Section 3; N & D	Page: Table 1, Attachment 2	☒	☐
	f.	**BMP Description Narrative** A narrative description of the location and type of perimeter and onsite BMPs used before, during, and after the earth disturbance activity.	Location: Section 3; N	Page: 3-6	☒	☐
	g.	**BMP Installation Sequence Narrative** A sequence of BMP installation and removal in relation to the scheduling of earth disturbance activities, prior to, during and after earth disturbance activities that ensures proper functioning of BMPs.	Location: Section 3; N & D	Page: 3-7, Attachment 2	☒	☐
	h.	**Supporting Calculations and Measurements** All BMP design calculations and information must be attached with the E&S plans.	Location: Section 3, N	Page: Attachment 4	☒	☐
	i.	**Plan Drawings** Plan drawings must include locations of proposed BMPs and a legend for all symbols used on the drawing. Construction details, notes, and specifications must be included to explain the drawings.	Location: Section 3; D	Page: Attachment 2	☒	☐
	j.	**Maintenance Program** A maintenance program which provides for the operation and maintenance of BMPs and the inspection of BMPs on a weekly basis and after each stormwater event, including the repair or replacement of BMPs to ensure effective and efficient operation. The program must provide for completion of a written report documenting each inspection and all BMP repair, or replacement and maintenance activities.	Location: Section 3; N	Page: 3-22	☒	☐
	k.	**Material Recycling and Disposal** Procedures which ensure that the proper measures for the recycling or disposal of materials associated with or from the project site will be undertaken in accordance with this title.	Location: Section 3; N	Page: 3-19	☒	☐
	l.	**Naturally Occurring Geologic Formations and Soil Conditions** Identify naturally occurring geologic formations or soil conditions that may have the potential to cause pollution during earth disturbance activities and include the locations on plan drawings. Include BMPs to avoid or minimize potential pollution and its impacts from the formations. If the applicant suspects substantial possibility of potential slope failure, include a geotechnical report prepared by a geotechnical engineer.	Location: Section 3; N	Page: Attachment 13	☒	☐
	m.	**Thermal Impacts** Identification of potential thermal impacts to surface waters of this Commonwealth from the earth disturbance activity including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts.	Location: Section 3; N	Page: 3-19	☒	☐

	n.	**E&S Plan and PCSM/SR Plan Consistency** The E&S Plan shall be planned, designed and implemented to be consistent with the PCSM Plan under § 102.8. Unless otherwise approved by the Department, the E&S Plan must be separate from the PCSM Plan and labeled "E&S" or "Erosion and Sediment Control Plan" and be the final plan for construction.	Location: Section 3; D	Page: Attachment 2	☒	☐
	o.	**Riparian Forest Buffers** Identification of existing and proposed riparian forest buffers should be included on the plan drawings if incorporated into the project site.	Location: Section 3; N	Page: 3-20	☒	☐
	p.	**Antidegradation Requirements** Satisfy antidegradation implementation requirements for special protection water and siltation-impaired waters including evaluation of nondischarge alternatives and ABACT.	Location: Section 3; N	Page: 3-24	☒	☐
4.	**Permit NOI Filing Fees** of $500 to the appropriate Clean Water Fund plus $100/Acre of earth disturbance payable to the Commonwealth of PA Clean Water Fund ($500 filing fee not required for subsequent phases) is required. For NOIs submitted to delegated county conservation districts, the administrative fee of $500 must be paid to the conservation district and disturbed acreage fee to the Commonwealth of PA (two checks).		Location: Provided separate from D & N	Page: _____	☒	☐
5.	**Municipal Notification:** (3 copies) Not required for subsequence phases.				☐	☐
	a.	Act 14 Municipal Notifications to the local municipality and county governments that specify that the application is for Erosion and Sediment Control General Permit for Earth Disturbance Associated with Oil and Gas Activities. A "sample" notification letter is provided as Attachment C of the instructions. **Proof or Receipt** of municipal notifications: copies of certified mail receipts, proof of deliver from a commercial carrier or acknowledgment letters from the local municipality and county government.	Location: Provided separate from D & N	Page: Section 4	☒	☐
	b.	Pennsylvania Inventory of Historical Places and the National Register of Historical Places: When conducting earth disturbance activities, the permittee shall protect archaeological specimens and historic resources in accordance with applicable State and Federal laws. For permitted activities on lands of the Allegheny National Forest (ANF) or other federal lands, the permittee should coordinate with the appropriate ANF Ranger or other appropriate federal agency on the protection of historic properties.	Location: Provided separate from D & N	Page: Section 6	☒	☐
6.	**Pennsylvania Natural Heritage Program (PNHP).** Include PNDI receipt, PNDI clearance and other information depending on the permit application option. (3 copies for paper application).		Location: Provided separate from D & N	Page: Section 6	☒	☐
7.	**Complete PCSM/SR Plans.** (1 Original, 2 copies) NOTE: Identify location(s) as Drawing (D), Narrative (N). (Identify Not Applicable as "N/A".) The PCSM/SR Plan must contain, at a minimum, the following:				☒	☐
	a.	**Topographic Features** The existing topographic features of the project site and immediate surrounding area must be shown plan drawings. The name of the USGS quadrangle map must be included.	Location: Section 7; D	Page: Attachment 1	☒	☐

	b.	**Characteristics of Naturally Occurring Geologic Formations and Soil Conditions** The types, depth, slope, locations and limitations of the soils and geologic formations.	Location: Section 7; N	Page: 3, Attachment 2	☒	☐
	c.	**Earth Disturbance Activity Characterization** The characteristics of the project site, including the past, present and proposed land uses Limit of Disturbance (LOD), areas of cuts and fill, proposed impervious areas, locations of roads, proposed contours of project area and the proposed alteration of the project site.	Location: Section 7; N	Page: 2	☒	☐
	d.	**Net Change in Volume and Rate of Runoff** An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area. Include pre-development and post-development drainage area map. Post-development drainage area map must show Point of Discharge(s) (PODs) from PCSM BMPs.	Location: Section 7; N	Page: 15	☒	☐
	e.	**Surface Water Classification** An identification and location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93.	Location: Section 7; N & D	Page: 4	☒	☐
	f.	**BMP Description Narrative** A written description of the location and type of PCSM/Site Restoration BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations.	Location: Section 7; N	Page: 5, 18	☒	☐
	g.	**BMP Installation Sequence Narrative** A sequence of PCSM/Site Restoration BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM/Site Restoration BMP installation.	Location: Section 7; N	Page: 5, 18	☒	☐
	h.	**Supporting calculations** All design information and calculations must be included with the PCSM/SR plan. Include verification of PCSM/SR plan consistency with the Act 167 plan, if a current and DEP approved Act 167 plan exists. Include summary of bio-infiltration BMPs used for the project using Attachment E of the NOI instructions.	Location: N/A	Page:	☐	☐
	i.	**Plan Drawings** The locations of BMPs with tributaries must be shown on the drawings. Notes, specifications, any constructions details, and any other supporting information needed to explain the drawings must also be included.	Location: N/A	Page:	☐	☐
	j.	**Long Term Operation and Maintenance Schedule** A long-term operation and maintenance schedule, which provides for inspection of PCSM/Site Restoration BMPs, including the repair, replacement or other routine maintenance of the PCSM/Site Restoration BMPs to ensure proper function and operation. The program must provide for completion of a written report documenting each inspection and all BMP repair and maintenance activities and how access to the PCSM/Site Restoration BMPs will be provided.	Location: N/A	Page:	☐	☐

	k.	**Material Recycling and Disposal** Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM/Site Restoration BMPs are in accordance with Department laws, regulations and requirements.	Location: Section 7; N	Page: 18	☒	☐
	l.	**Addressing Impacts from Naturally Occurring Geologic Formations and Soil Conditions** An identification of naturally occurring geologic formations or soil conditions that may have the potential to cause pollution after earth disturbance activities are completed and PCSM/Site Restoration BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts.	Location: Section 7; N	Page: 3	☒	☐
	m.	**Thermal Impacts** An Identification of potential thermal impacts from post construction stormwater to surface water of this Commonwealth including BMPs to avoid, minimize or mitigate potential thermal pollution from thermal impacts.	Location: Section 7; N	Page: 11	☒	☐
	n.	**Riparian Forest Buffer Management Plan** A riparian forest buffer management plan when required under § 102.14.	Location: Section 7; N	Page: 12	☒	☐
	o.	**Antidegradation Requirements** A demonstration of compliance with antidegradation implementation requirements including evaluation of nondischarge alternatives and ABACT for where activities will be conducted in special protection waters or siltation impaired waters.	Location: Section 7; N	Page: 14	☒	☐
8.	**PCSM Plan Stormwater Analysis** Do the regulated activities require site restoration or reclamation? If Yes, skip to Item 9. If No, provide the following information:			☒ Yes ☐ No	☒	☐
	a.	**Site Characterization and Assessment** Predevelopment site characterization and assessment of soil and geology including infiltration and geotechnical studies that identify location and depths of test sites and methods used.	Location: Section 7; N	Page: 2	☒	☐
	b.	**Volume Reduction and Water Quality Requirements** Analysis demonstrating that the PCSM BMPs will meet the volume reduction and water quality requirement specified in an applicable Department approved and current Act 167 stormwater management watershed plan; **or** manage the net change for storms up to and including the 2-year/24-hour storm event when compared to preconstruction runoff volume and water quality.	Location: N/A	Page: _____	☐	☐
	c.	**Rate Requirements** Analyses demonstrating that the PCSM BMPs will meet the rate requirements specified in an applicable Department approved and current Act 167 stormwater management watershed plan; **or** manage the net change in peak rate for the 2-, 10-, 50-, and 100-year/24-hour storm event in a manner not to exceed preconstruction rates.	Location: N/A	Page: _____	☐	☐
	d.	**Calculation Methodologies** Identification of the methodologies for calculating total runoff volume and peak rate of runoff and provide supporting documentation and calculations.	Location: N/A	Page: _____	☐	☐

	e.	**Construction Techniques** Identification of construction techniques or special consideration to address soil and geologic limitations.	Location: N/A	Page: _____	☐	☐
	f.	**Antidegradation Requirements** Demonstration of compliance with antidegradation implementation requirements including evaluation of nondischarge alternatives and ABACT for where activities will be conducted in special protection waters or siltation impaired waters.	Location: Section 7; N	Page: 14	☒	☐
9.	**Phased Projects** Is the activity being conducted as a phased project? ☐ Yes ☒ No If yes, all of the following must be completed:				☐	☐
	a.	Initial Phase - Is the master plan included? ☐ Yes ☐ No				
	b.	Subsequent Phase(s) – Is(are) the subsequent phase(s) identified in the master plan? ☐ Yes ☐ No				
10.	**Preparedness, Prevention and Contingency (PPC) Plan** Will fuels, chemicals, solvents, other hazardous materials be used or stored on site during earth disturbance activities? ☒ Yes ☐ No If yes, a PPC Plan must be maintained on the site during earth disturbance.				☐	☐
11.	**Subsequent Phase Certification for Expedited Reviews** Is the activity being conducted as a phased project? ☐ Yes ☒ No Is an expedited review being requested for subsequent phase? ☐ Yes ☒ No If yes, all of the following must be completed:				☐	☐

I do hereby certify to the best of my knowledge, information, and belief, that the Erosion and Sediment Control and PCSM/Site Restoration Plan are true and correct, represent actual field conditions and are in accordance with the 25 Pa. Code Chapters 78 and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Professional Seal
Company	
Address	
Phone	
Most Recent DEP Training Attended Location _____ Date _____	
e-Mail Address	

EXPEDITED REVIEW PROCESS

In addition to the certification required above, applicants using the expedited permit review process must attach an E&S and PCSM/Site Restoration Plan developed and sealed by a licensed professional engineer, landscape architect, surveyor or professional geologist. The plans shall contain the following certification:

I do hereby certify to the best of my knowledge, information, and belief, that the Erosion and Sediment Control and PCSM/Site Restoration Plan and Post Construction BMPs are true and correct, represent actual field conditions and are in accordance with the 25 Pa. Code Chapters 78 and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

12.	**Permit Renewal** Is a permit renewal being requested? ☐ Yes ☒ No If yes, all of the following must be completed:		☐	☐
	a.	Administratively complete, signed, and notarized Notice of Intent Form, including Items 1-8. (1 signed original and 2 copies of the NOI/application for paper application)	☐	☐
	b.	Permit filing fee of $500 payable to the appropriate clean water fund plus $100/Acre of earth disturbance payable to the Commonwealth of PA Clean Water Fund.	☐	☐

2. NOTICE OF INTENT APPLICATION

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF WATER PROGRAMS
OFFICE OF OIL AND GAS MANAGEMENT

OFFICIAL USE ONLY
ID #
Date Received
AUTH
SITE
CLNT
APS
Fee
Check No.
Check Date

NOTICE OF INTENT (NOI) FOR COVERAGE UNDER THE EROSION AND SEDIMENT CONTROL GENERAL PERMIT (ESCGP-3) FOR EARTH DISTURBANCE ASSOCIATED WITH OIL AND GAS EXPLORATION, PRODUCTION, PROCESSING, OR TREATMENT OPERATIONS OR TRANSMISSION FACILITIES

READ THE INSTRUCTIONS PROVIDED IN THIS PERMIT APPLICATION PACKAGE BEFORE COMPLETING THIS FORM. PLEASE PRINT OR TYPE INFORMATION IN BLACK OR BLUE INK.

SECTION A. APPLICATION TYPE

Check one:

NEW ☐ **RENEWAL** ☐ **MAJOR MODIFICATIONS (Provide ESCGP number)** ☒ ESG0300015002

PHASED ☐ (check only if applicable; *note: Most projects are not submitted as phased projects*)

Check one: EXPEDITED ☐ **STANDARD** ☒

If an Expedited Review Process being requested, be advised that the Expedited Review is not available for all projects. Refer to Section D - Expedited Review Process of the ESCGP-3 NOI Instructions to determine if the project is eligible.

SECTION B. CLIENT INFORMATION

Applicant's Last Name (If applicable)	First Name	MI	Telephone No. (610)670-3200
Gordon	Matthew	L	

Organization Name or Registered Fictitious Name	Telephone No.
Sunoco Pipeline, L.P.	

DEP Client ID No.

Headquarters Mailing Address	City	State	ZIP Code
535 Fritztown Road	Sinking Spring	PA	19608

Email Address mlgordon@sunocologistics.com

Co-Applicant's Last Name (If applicable)	First Name	MI	Telephone No. 715-874-4510
Bell	David	E	

Organization Name or Registered Fictitious Name	Telephone No.
Precision Pipeline, LLC	

Address	City	State	ZIP Code
3314 56th Street	Eau Claire	WI	54703

Email Address dbell@precisionpipeline.com

SECTION C. SITE INFORMATION					
Is there an existing ESCGP associated with this site? ☒ Yes ☐ No If yes, Permit No. ESG0300015002					
Has a well permit application been submitted for this site? ☐ Yes ☒ No If yes, Permit No. _____ Does this site have a 911 address? ☐ Yes ☒ No If yes, provide site location address.					
Site Name Pennsylvania Pipeline Project					
Site Location Blair, Hutingdon, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, and Berks Counties		Site No. (if another permit has been issued for the site)			
Site Location – City Juniata Township, Blair County to Caernarvon Township, Berks County			State PA	ZIP Code	
Detailed Written Directions to Site See Directions in Attachment 1					
Primary Location	County Blair, Hutingdon, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, and Berks Counties	Municipality See Attachment 2. The Horse Valley Major Modification is located in Toboyne Township, Perry County.	City ☐	Boro ☒	Twp. ☒

SECTION D. EXPEDITED REVIEW	
I. Expedited Review Eligibility	
1. Is any part of the project in the watershed of a surface water with an existing or designated use of exceptional value or high quality pursuant to Chapter 93 (relating to water quality standards), in an exceptional value wetland in accordance with 25 Pa. Code § 105.17, or in the watershed of an impaired surface water where the cause of the impairment is identified as siltation?	☒ Yes ☐ No
2. Will the project in which the well pad will be constructed be in or on a floodplain?	☐ Yes ☒ No
3. Is any earth disturbance located or proposed to be located on land known to be contaminated by the release of regulated substances as defined in Section 103 of Act 2, 35 P.S. § 6026.103?	☐ Yes ☒ No
4. Will naturally occurring geologic formations or soil conditions provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution when disturbed?	☒ Yes ☐ No
5. Do any unresolved non-compliance issues exist with the applicant or the facility?	☒ Yes ☐ No
6. Is the project a transmission project?	☒ Yes ☐ No

If yes to any of the above questions the project is not eligible for Expedited Review; If the project is eligible for Expedited Review, all the following items must be completed.	
II. Expedited Review Process	
1. Is the technically and administratively complete and accurate NOI package prepared and certified by a licensed professional?	☐ Yes ☐ No
2. Are E&S and PCSM/Site Restoration Plan drawings and narrative prepared and sealed by a licensed professional? *(Include interim restoration details when needed)*	☐ Yes ☐ No
3. Include a Resource Delineation Report and answer the following questions: (If the answer to question a. is "Yes" then skip to #4. If the answer to a. is "No" the applicant must answer "Yes" to at least one of the questions, b. through d. to be eligible for expedited review.)	
a. Were all wetland resources delineated during the growing season?	☐ Yes ☐ No
b. If not during the growing season, was a follow-up visit conducted during the growing season to verify/adjust boundaries and look for potentially missed resources?	☐ Yes ☐ No
c. Was a quality assurance field review conducted at a later date by an independent qualified wetland professional to verify boundaries and look for potentially missed resources? (If yes, attach Quality Assurance Field Review Report)	☐ Yes ☐ No
d. Was a Jurisdictional Determination (JD) or Preliminary JD conducted by the US Army Corps of Engineers on the whole project? (If yes, attach Preliminary or Jurisdictional Determination Report)	☐ Yes ☐ No
4. If applicable, have you included PNDI clearance letters or other documentation from applicable resource agencies?	☐ Yes ☐ No
5. If the project site contains, is along, or within 100 feet of a river, stream, creek, lake, pond or reservoir, will you establish new or preserve existing riparian forest buffer at least 100 feet in width between the top of streambank or normal pool elevation of a lake, pond or reservoir and areas of earth disturbances. If no, will a waiver be obtained? ☐ Yes ☐ No	☐ Yes ☐ No
6. Name of Licensed Professional Company	
Address	
Phone	

SECTION E. PROJECT INFORMATION			
1. Total Project Area/Project Site (Ac):	1754	Total Disturbed Area (Ac):	1754
Increased disturbed acreage *(for permit modification only)*			14.54, 3.94
Fee: ***(For additional information regarding fees, refer to NOI Instructions #3 Permit NOI Filing Fees.)***			$ 1,500, $900
2. Project Name: Pennsylvania Pipeline Project			

3. Project Type (Check all that apply)

- ☐ Oil/Gas Well [1]
- ☐ Gathering Facility
- ☐ Treatment Facility
- ☐ Compressor Station
- ☒ Pipeline
- ☐ Storage Field Facility
- ☐ Other
- ☐ Transmission Facility
- ☐ Processing Facility
- ☐ Well Development Impoundment
- ☒ Non-FERC regulated Transmission Facility
- ☐ Ground/Surface Water Withdrawal Site

[1] If Oil/Gas Well; is the well conventional or unconventional? ☐ Conventional ☐ Unconventional

Project Description

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project that would expand existing pipeline systems to provide natural gas liquid (NGL). The project involves the installation of approximately two parallel pipelines within a 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania (PA) to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255.8 miles. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system. The 20-inch pipeline will be installed first, followed by the 16-inch line. Any temporary stabilization required will be implemented in accordance with the project's Erosion and Sediment (E&S) Plans. For a conventional lay, the pipelines would be installed within the same disturbance to the maximum extent practicable. For safety purposes, the installation would be staggered by what is estimated to be no more than 60 days. At some HDDs with longer drills, however, the time period between installation of the two pipelines may exceed 60 days. Any temporary stabilization required would be implemented in accordance with project's E&S Plans. Any permanent or temporary impacts associated with the second pipeline installation will be similar to the first installation, as described in more detail in the Application and the balance of these responses.

The Piney Creek Major Modification consists of a change in the route and installation method for the 16-inch diameter pipeline previously permitted as the Piney Creek Horizontal Directional Drill (HDD). This permit request is to convert the HDD to conventional open trench construction for the majority of the reroute, and a conventional auger bore under Piney Creek Road / High Street (State Route 866). This change in methodology is the result of geologic conditions encountered while installing the 20" Pipeline in this ares. SPLP has elected to abandon any future HDD attempts to install the 16-inch pipeline through this area and has sought an alternate route of installation agreeable to the landowners and that minimizes impacts to Waters of the Commonwealth.

The Horse Valley Major Modification consist of a change in route and installation method of the 16-inch diameter pipeline from a Horizontal Directional Drill (HDD) to an open cut installation. This change in methodology is a result of the encountering of an unconfined aquifer during the 20-inch pipe HDD under an Exceptional Value (EV) wetland/stream complex. SPLP has elected to abandon any future HDD attempts to install the 16-inch pipeline through this area and has sought an alternate route of installation agreeable to the landowners and that minimizes impacts to the aquifer.

Construction activities will involve clearing and grubbing, trenching, pipe installation, site restoration, and access road construction/improvement. Erosion and sediment controls will be in place during earth disturbance activities. Following completion of pipeline installation, the area will be returned to the general grade present prior to pipeline installation in order to maintain preconstruction elevations and drainage patterns. Disturbed areas will be seeded and mulched. Erosion and sedimentation control devices will be maintained until site work is complete and revegetation is successful.

The project will be constructed for approximately 162 miles in the PADEP South Central Region. The project disturbance (in acres) by county is as follows:

-Blair County: 233 Acres previously approved, Piney Creek Major Modification 14.54 acres (pending approval), minor modification 5.6 acres (pending approval) (Total 254)
-Huntingdon County: 273 Acres previously approved, Mt. Untion Pump Station 2.83 acres, Minor Modification 1.87 (pending approval) (Total 278 acres)
-Juniata County: 35 Acres
-Perry County: 121 Acres previously approved, Doylesburg Pump Station 1.80 acres, Major Modification 3.94 acres (Total 127 acres)
-Cumberland County: 311 acres previously approved, Minor Modification 2.64 (Pending Approval) (Total 314 Acres)
York County: 69 Acres previsouly approved
-Dauphin County: 121 Acres previsouly approved, Middletown Pump Station 9.1 acres, Minor Modification (Total 131 acres)
-Lebanon County: 221 Acres previously approved, Minor Modification 1.58 (Pending Approval), (Total 223 Acres)
-Lancaster County: 75 Acres previously approved
-Berks County: 239 Acres previously approved, Beckersville Pump Station 5.98 acres, Minor Modification 2.84 acres (Pending Approval) (Total 248 acres)
Provide the date of pre-application meeting (if conducted with the Department)

4. Provide the latitude and longitude coordinates for the center of the project. The coordinates should be in Decimal degrees and North American Datum 1983. The coordinates must meet the current DEP policy regarding locational accuracy. For linear projects provide the project's termini.

   Latitude (DD) 40.4087 Longitude (DD) - 78.5564

   Latitude (DD) 40.1558 Longitude (DD) - 75.8429

   Horizontal Collection Method: ☐ GPS ☒ Interpolated from U.S.G.S. Topographic Map ☐ DEP's eMAP

5. U.S.G.S. 7.5 min. topographic quadrangle Name Cresson, Hollidaysburg, Frankstown, Williamsburg, Cassville, Entriken, Huntingdon, Butler Knob, Aughwick, Blairs Mills, Blain, Andersonburg, Newburg, Newville, Landisburg, Plainfield, Carlisle, Shermans Dale, Mechanicsburg, Wetzville, Lemoyne, Steelton, Middletown, Elizabethtown, Hershey, Lebanon, Palmyra, Richland, Womelsdorf, Sinking Spring, Terre Hill, Reading, Morgantown, Elverson, and Washington.

   (*Include a copy of the project area on the 7.5 min quad map)*

6. Will the project be conducted as a phased permit project? ☐ Yes ☒ No

   If Yes, Include Master Site Plan Estimated Timetable for Phased Projects. ☐ Additional sheet(s) attached.

Phase No. or Name	Description	Total Area	Disturbed Area	Start Date	End Date

7. List existing and previous land use for a minimum of the previous 5 years. Forested/ agricultural/ rural residential

8. Other Pollutants: Will the stormwater discharge contain pollutional substances other than sediment? ☐ Yes ☒ No

   If yes, explain and provide any available quantitative data.

9. Will fuels, chemicals, solvents, other hazardous waste or materials be used or stored on site during earth disturbance activities or will Horizontal Directional Drilling (HDD) activities be conducted?

   Yes ☒ No ☐ ***(If yes, Preparedness, Prevention and Contingency (PPC) Plan must be maintained on site during earth disturbance. See NOI Instructions, E.9 PPC Plan Guidance for further information.)***

10. Is the project in the watershed of an impaired surface water where the cause of the impairment is identified as siltation?

    Yes ☒ No ☐ ***(If yes, show how the project will not result in a net change in volume, rate or water quality. See section I below, and E.10 of NOI instructions.)***

11. Are there potentially hazardous naturally occurring geological or soil conditions in any portion of the project or surrounding area? Yes ☒ No ☐

    If yes, do the potentially hazardous geologic or soil conditions have the potential to cause or contribute to pollution as a result of the proposed earth disturbance activities?

    If no, provide an explanation.

    If yes, Geologic Hazard Mitigation Plan must be attached and explain where in this application details are provided.

12. Has the Act 14 Municipal Notification and proof of receipt of notification been attached to the NOI?

    Yes ☒ No ☐ ***(If not, the NOI is not complete, see E.12 and #4 Municipal Notification in the NOI Instructions for additional guidance.)***

13. Has the PNDI receipt been attached to the NOI?

    Yes ☒ No ☐ ***(If not, the NOI is not complete, see E.13 and #5 PNHP in the NOI Instructions for additional guidance.)***

14. Have the E&S Plan and PCSM/SR Plan been planned and designed to be consistent?

    Yes ☒ No ☐

15. Have existing and/or proposed Riparian Forest Buffers been identified?

    Yes ☒ N/A ☐ ***(If yes, they must be shown on the E&S Plan as well as the PCSM/SR Plans.)***

16. Have antidegradation implementation requirements for special protection waters been addressed?
Yes ☒ No ☐ N/A ☐ ***(If yes, antidegradation requirements must be included in the plan.)***

17. Has the seasonal high groundwater level been identified and 20-inch separation established at all excavation locations for pits for conventional operations and Well Development Impoundments for unconventional operations?
Yes ☐ No ☐ N/A ☒

18. Receiving Waters	Chapter 93, Designated Use Stream Classification	Chapter 93, Existing Use Stream Classification
See Attachment 3	☒ HQ ☐ EV ☒ Other WWF, CWF, TSF ☒ Siltation-impaired	☐ HQ ☐ EV ☐ Other _____ ☐ Siltation-impaired
Piney Creek Major Modification: UNT to Piney Creek (2), and Piney Creek	☒ HQ ☐ EV ☒ Other CWF ☐ Siltation-impaired	☐ HQ ☐ EV ☐ Other _____ ☐ Siltation-impaired
Horse Valley Major Modification: UNT to Horse Valley (2), Horse Valley Run	☒ HQ ☐ EV ☐ Other CWF ☐ Siltation-impaired	☐ HQ ☐ EV ☐ Other _____ ☐ Siltation-impaired
_____	☐ HQ ☐ EV ☐ Other _____ ☐ Siltation-impaired	☐ HQ ☐ EV ☐ Other _____ ☐ Siltation-impaired

Secondary Receiving Water	Secondary Chapter 93, Designated Use	Secondary Existing Use
See Attachment 3		

Name of Municipal or Private Separate Storm Sewer Operator, if applicable.
See Attachment 4

Non-Surface Receiving Water: (include off-site discharges)

SECTION F. EROSION AND SEDIMENT CONTROL (E&S) PLAN

See the attached Instructions for additional guidance with E&S Plans

Erosion and Sediment Control Plan BMPs should be designed to minimize accelerated erosion and sedimentation through limiting the extent and duration of earth disturbance, protection of existing drainage and vegetation, limiting soil compaction and controlling the generation of increased runoff. The Department recommends the use of the *Pennsylvania Erosion & Sedimentation Pollution Control Program Manual (E&S Manual)* (363-2134-008) to achieve this goal. The E&S Plan must meet the requirements of Pa. Code § 102.4(b) and submitted with the NOI. Also, see section 2. of the NOI instruction for detailed information on completing the E&S plan and additional requirements.

a. E&S Plan Summary

Provide a summary of proposed E&S BMPs and their performance to manage E&S for the project.

Compost Filter Socks - This temporary sedimentation control measure consists of wood or metal posts driven through a compost filled mesh tube. Filter socks will be located as needed on side-slope and down-slope boundaries of disturbed areas. Compost filter socks will be sized using the DEP Construction Detail.

Tarpaulin Covers - Tarpaulin covers may be used, as necessary, to protect topsoil storage stockpiles from wind and precipitation erosion. Stockpile slopes will be 2:1 or less. A minimal amount of soil will be stockpiled so that the height of the stockpile is less than 35 feet.

Rock Construction Entrance – Temporary access routes will be established on and proximate to the site to facilitate construction activities. The use of access routes will help confine truck and equipment traffic to specific corridors thus minimizing land disturbance and protecting vegetation. Site traffic during wet weather will be limited. No vehicles will be permitted in streams or rivers.

Wash Racks – Wash racks will be used at rock construction entrances and will be designed to accommodate anticipated vehicular traffic. A water supply will be made available at wash racks to wash the wheels of vehicles exiting the site.

Pumped Water Filter Bag – Pumped water filter bags may be used to filter water pumped from disturbed areas prior to discharging to surface waters. Compost filter socks shall be installed within 50 feet of any receiving surface water or where grassy area is not available.

Erosion Control Blanket - A manufactured erosion control blanket shall be installed on all slopes 3:1 (H:V) or steeper and within 100 feet of stream banks, where applicable. The blanket shall be biodegradable but capable of providing protection for two growing seasons. Straw or similar fiber material shall be placed between two biodegradable nets. The top net shall be heavyweight and UV stabilized; the bottom net shall be a lightweight netting. Erosion control blankets shall be anchored and stapled in place in accordance with the manufacturer's recommendations and the detail on the construction drawings. For slopes between 3:1 and 1:1 (H:V) use erosion control blanket SC 150 as manufactured by North American Green or Owner approved equal material or equal method.

Waterbars – Waterbars shall be installed across the right-of-way on all slopes greater than 5%. Waterbars should be constructed at a slope of 2% and discharge to a well-vegetated area. Waterbars should not discharge into an open trench. Waterbars should be oriented so that the discharge does not flow back onto the right-of-way. Obstructions (e.g. compost filter socks etc.) should not be placed in any waterbars. Where needed, they should be located below the discharge end of the waterbar.

Trench Plugs - To be used to prevent piping along the pipeline.

b. E&S Plan BMP Design

Check those that apply:

☒ E&S Plan is designed using BMPs in the *E&S Manual*.

☐ E&S Plan is designed using an alternative BMP or design standard approved by DEP.

Note: NOI packages submitted with alternate BMPs not approved by the Department will be returned to the Applicant.

c. Do you have any information regarding riparian buffer which differs from Section G, Riparian Buffer?

Yes ☐ No ☒

Explain:

d. Thermal Impacts Analysis

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential thermal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. The disturbed areas will be reseeded as soon as practicable following construction

e. Off-Site Discharge Analysis

Does the activity propose any off-site discharges to areas other than surface waters? ☒ Yes ☐ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge to neighboring properties.

The applicant must provide a demonstration in both E&S and PCSM/SR plans that the discharge will not cause erosion, damage, or a nuisance to off-site properties.

SECTION G. RIPARIAN BUFFER

1. Will you be protecting, converting or establishing a voluntary riparian forest buffer as part of this project? ☒ Yes ☐ No
   If yes, as part of the PCSM/SR Plan, provide a Buffer Management Plan.
2. Will proposed earth disturbance activities be conducted in an EV or HQ watershed AND within 150 feet of a perennial or intermittent river, stream, or creek, or lake, pond, or reservoir? ☒ Yes ☐ No

   If no, proceed to the next section/module.
3. Does this project qualify for an exception (see § 102.14(d)(1))? ☒ Yes ☐ No

   If yes, indicate below the type of project for which the exception applies by marking the appropriate box.

   ☐ Oil and gas activities for which site reclamation or restoration is part of the permit authorization in Chapter 78 and 78a.

   ☐ Road maintenance activities.

   ☐ The repair or maintenance of existing pipelines and utilities.

   ☒ Other (see §102.14(d)(1))

   If exceptions are checked, explain how existing riparian buffer will be undisturbed to the extent practicable. Provide a demonstration that the requirements of §102.14(b) are met, or provide the necessary information to request a riparian buffer waiver.
4. Are you requesting a riparian buffer waiver for this project (see § 102.14(d)(2))? ☒ Yes ☐ No

   If yes, indicate below the type of project for which you are requesting a waiver by marking the appropriate box.

   ☒ Linear project that may include pipelines, public roadways, rail lines, or utility lines.

   ☐ Project is of a temporary nature where the site will be fully restored to its preexisting conditions during the ESCGP permit term.

   ☐ Project where compliance with mandatory riparian buffers is not appropriate or feasible due to site characteristics or existing structures at the project site.

   ☐ Other (see §102.14(d)(2)):

   If waivers are checked, explain how existing riparian buffers will be undisturbed to the extent practicable.

   Note: If “Yes” to #2 **AND** “No” to #3 and #4, provide an attachment to demonstrate how the requirements of §102.14 are met.

SECTION H. POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) AND/OR SITE RESTORATION(SR) PLAN

See NOI Instructions for additional guidance with PCSM Plans

PCSM/SR BMPs should be designed to use natural measures to eliminate pollution, infiltrate runoff, not require extensive construction/maintenance, promote pollutant reduction, and preserve the integrity of stream channels. All PCSM/SR BMPs proposed in the PCSM/SR Plan must be designed in accordance with Ch. 102, Ch. 78a for unconventional operations, Ch. 78 for conventional operations and the *Pennsylvania Stormwater Best Management Practices Manual (Stormwater BMP Manual)* (363-0300-002). If alternate design criteria are utilized for the proposed project, they must have prior approval by the Department, or the NOI Application will be returned to the Applicant.

After construction is completed, how much of the entire disturbed area will be restored to meadow in good condition or better, or existing conditions? ☐ All ☒ Partial ☐ None

Include PCSM narrative and drawings for remaining impervious area. Also include a map showing the proposed contours of the site restoration plan.

If there are additional stages of the project prior to permit termination or expiration, list the stages and provide the documents required by subsection 'a' to section 'g' for each stage (e.g. partial restoration or changes to the amount of compacted areas, gravel, and/or impervious areas). Upload a narrative for each additional stage in addition to the drawings.

EXAMPLE

Stage No	Stage Name	PCSM Plan	SR Plan
Stage 1		☐	☐
Stage 2		☐	☐
Stage 3		☐	☐
Stage 4		☐	☐

Act 167 Consistency. Check those that apply.

Is there an Act 167 Plan? ☒ Yes ☐ No

☐ The attached PCSM/SR Plan is consistent with an applicable approved Act 167 Plan.

Complete the following for all approved Act 167 Stormwater Management Plans. (Use additional sheets if necessary)

Act 167 Plan Name: See Attachment 5 — Date Adopted: _____ — Consistency Letter Included ☐ — Verification Report Included ☒

Note: A consistency letter is not required if a verification report is provided. See NOI Instructions. The PCSM/SR Plan must satisfy either sub paragraph 1, 2, or 3 below. Check those that apply.

1. ☒ Act 167 Plan approvals on or after January 2005 – The attached PCSM/SR Plan, in its entirety, is consistent with all requirements pertaining to rate, volume, and water quality from an Act 167 Stormwater Management Plan approved by DEP on or after January 2005. Box 1 must be checked if a current, DEP approved Act 167 plan exists.
2. ☒ The PCSM/SR Plan meets the standard design criteria from sections 102.8(g)(2) and (3) and the *Stormwater BMP Manual*. For projects involving oil and gas activities authorized by a permit issued under Chapter 78 or Chapter 78a (well pads) or pipelines and other similar utility infrastructure, post construction stormwater management requirements are met for all areas that are restored to preconstruction conditions or to a condition of meadow in good condition or better. *[Note: PCSM plans must meet both the volume and rate requirements in the regulations, which are provided in the 2 sections mentioned in this paragraph].*
3. ☐ Alternative Design Standard – The attached PCSM/SR Plan was developed using approaches as provided in 102.8(g)(2)(iv) and 102.8(g)(3)(iii). Demonstrate/explain in the space provided below how this standard will be either more protective than what is required in 102.8(g)(2) and 102.8(g)(3) or will maintain and protect existing water quality and existing and designated uses.

PCSM/SR BMP Alternative Standards:

Has the alternative BMP or design standard been approved by the Department?

☐ Yes

☐ No – Do not submit the ESCGP-3 application and see Section (H) of the NOI Instructions concerning the alternative BMP approval process.

Water Quality Compliance:

Does the PCSM/SR plan comply with requirements for volume control? ☒ Yes ☐ No

If yes, is at least 90% of the disturbed area controlled by a PCSM BMP? ☒ Yes ☐ No

If yes, do you have the Standard PCSM Worksheet # 10 attached to show water quality compliance has achieved?
☒ Yes ☐ No

If no, attach Standard PCSM Worksheets # 12 and #13 to show water quality compliance has achieved.

If PCSM/SR plan is not complying with the requirements for volume control, attach Standard PCSM Worksheets # 11, # 12 and #13 to show water quality compliance has achieved.

a. PCSM/SR Plan Summary

Provide a summary of proposed BMPs and their performance to manage PCSM/SR for the project.

The right-of-way and the area where the major modification will take place will be returned to meadow in good condition. Areas where PCSM BMPs were required have not changed with the major modification and information regarding PCSM PMPs can be found in the original Permit NOI (ESG0300015002).

Check all that apply ☐ PCSM BMPs ☐ SR BMPs

b. Do you have any information regarding riparian buffer which differs from what was submitted in the Section G, Riparian Buffer?

☐ Yes ☒ No

Explain:

c. Thermal Impacts Analysis

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated. Potential themal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. Permanent seeding will occur as soon as practicable during germinating months.

d. Off-Site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☒ Yes ☐ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge to neighboring properties.

The Applicant must provide a demonstration in both the E&S and PCSM/SR Plans that the discharge will not cause erosion, damage, or a nuisance to off-site properties.

e. Summary Table for Supporting Calculation and Measurement Data
(See NOI Instructions for additional guidance with this section)

The remainder of this section (Summary Table for Calculation and Measurement Data) does not need to be completed for areas of projects involving oil and gas activities authorized by Chapter 78 or Chapter 78a (well pads) or pipelines and other similar utility infrastructure which will be restored to meadow in good condition or better or existing conditions.

Watershed Name: No change for major modification, see original permit NOI, permit # ESCG0300015002

Volume Control design storm frequency _____ Rainfall amount _____ inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)			
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs			
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs			
Stormwater discharge rate for the design frequency storm	Pre-construction	Post Construction	Net Change
1) 2-Year/24-Hour			
2) 10-Year/24-Hour			
3) 50-year/24-Hour			
4) 100-year/24-Hour			

f. Summary Description of PCSM/SR BMPs

In the lists below, check the BMPs identified in the PCSM Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the PCSM/SR Plan is not listed below, describe it in the space provided after "Other". A summary table with infiltration testing information (Attachment E, included in the NOI Instructions) must be submitted for all Bio-infiltration BMPs included in PCSM/SR plan.

For Rate control provide the volume of stormwater treated and acres treated for the 100-year/24-hour storm event.

For volume control and water quality provide the volume of stormwater treated and acres treated for the 2-year/24-hour storm event.

Key for BMP purpose(s): VC = Volume Control; RC = Rate Control; and WQ = Water Quality

BMP	Function(s)	Purpose(s)	Volume of stormwater treated	Acres treated
Site Restoration ONLY ☒ Restore Site to Meadow in Good Condition or Better, or Existing Conditions	Infiltration/Recharge Detention/WQ Treatment	☒ VC ☒ RC ☒ WQ	N/A	3.94
Bio-infiltration areas ☐ Infiltration Trench ☐ Infiltration Bed ☐ Infiltration Basin ☐ Rain Garden/ Bioretention ☐ Infiltration Berm	Infiltration/Recharge	 ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ	 _____ _____ _____ _____ _____	 _____ _____ _____ _____

Natural Area Conservation ☐ Streamside Buffer Zone ☐ Wetland Buffer Zone ☐ Sensitive Area Buffer Zone ☐ Pre-Construction Drainage Pattern Intact	Infiltration/Recharge	☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ	_____ _____ _____ _____	_____ _____ _____ _____
Stormwater Retention ☐ Constructed Wetlands ☐ Wet Ponds ☐ Retention Basin	Detention/Retention	☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ	_____ _____ _____	_____ _____ _____
Sediment and Pollutant Removal ☐ Vegetated Filter Strips ☐ Compost Filter Sock ☐ Detention Basins	Water Quality Treatment	☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ	_____ _____ _____	_____ _____ _____
Access Road Design ☐ Road Crowning ☐ Ditches ☐ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☐ Riprap Aprons ☐ Upslope Diversions ☐ Other_____	Infiltration/Recharge	☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ ☐ VC ☐ RC ☐ WQ	_____ _____ _____ _____	_____ _____ _____ _____

g. Critical PCSM Plan stages

Identify and list critical stages of implementation of the PCSM Plan for which a licensed professional or designee shall be present on site.

Refer to the original permit NOI for Permit # ESCG0300015002

SECTION I. ANTIDEGRADATION ANALYSIS

This section must be completed where earth disturbance activities will be conducted in the watershed of a surface water with an existing or designated use of exceptional value or high quality pursuant to Chapter 93 (relating to water quality standards), projects where any part is located in an exceptional value wetland in accordance with 25 Pa. Code § 105.17, and projects where any part is located in the watershed of an impaired surface water where the cause of impairment is identified as siltation.

Part 1 - NONDISCHARGE ALTERNATIVES EVALUATION

The applicant must consider and describe any and all non-discharge alternatives for the entire project area which are environmentally sound and will**:**

- Minimize accelerated erosion and sedimentation during the earth disturbance activity
- Achieve no net change from pre-development to post-development volume, rate and concentration of pollutants in water quality

E & S Plan	PCSM/SR Plan
Check off the environmentally sound nondischarge Best Management Practices (BMPs) listed below to be used prior to, during, and after earth disturbance activities that have been incorporated into your E & S Plan based on the site analysis. For non-discharge BMPs not checked, provide an explanation of why they were not utilized. Also for BMPs checked, provide an explanation of why they were utilized. (Provide the analysis and attach additional sheets if necessary) The best possible pipeline route was selected based on landowner agreements, and minimization of environmental impacts, and engineering/constructibiliy factors. The project's disturbed area will be limited to the area required for construction, and the duration of construction will be minimized to the extent practicable. Riparian forest buffers will be protected to the extent practicable during construcion activities at stream crossings.	Check off the environmentally sound nondischarge Best Management Practices (BMPs) listed below to be used after construction that have been incorporated into the PCSM/SR Plan based on your site analysis. For non-discharge BMPs not checked, provide an explanation of why they were not utilized. Also for BMPs checked, provide an explanation of why they were utilized. (Provide the analysis and attach additional sheets if necessary) The best possible pipeline route was selected based on landowner agreements, and minimization of environmental impacts, and engineering/constructibility factors. The pipeline right of way will be restored to a meadow condition at original contours to maintain the pre-construction drainage patterns. Riparian forest buffers will be protected to the extent practicable.
Nondischarge BMPs ☐ Alternative Siting ☐ Alternative location ☐ Alternative configuration ☐ Alternative location of discharge ☒ Limited Disturbed Area ☒ Limiting Extent & Duration of Disturbance (Phasing, Sequencing) ☐ Riparian Buffers (150 ft. min.) ☐ Riparian Forest Buffer (150 ft. min.) ☐ Other _____	**Nondischarge BMPs** ☐ Alternative Siting ☐ Alternative location ☐ Alternative configuration ☐ Alternative location of discharge ☐ Low Impact Development (LID / BSD) ☐ Riparian Buffers (150 ft. min.) ☐ Riparian Forest Buffer (150 ft. min.) ☒ Infiltration ☐ Water Reuse ☒ Other pre-construction drainage pattern intact within the right-of-way.
Will the non-discharge alternative BMPs eliminate the net change in rate, volume and quality during construction? ☐ Yes ☒ No If yes, antidegradation analysis is complete. If no, proceed to Part 2.	Will the non-discharge alternative BMPs eliminate the net change in rate, volume and quality after construction? ☐ Yes ☒ No If yes, antidegradation analysis is complete. If no, proceed to Part 2.

PART 2 - ANTIDEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES (ABACT)

If the net change in stormwater discharge from or after construction is not fully managed by nondischarge BMPs, the applicant must utilize ABACT BMPs to manage the difference. The Applicant must specify whether the discharge will occur during construction, post-construction or both, and identify the technologies that will be used to ensure that the discharge will be a non-degrading discharge. ABACT BMPs include but are not limited to:

E & S Plan

☒ **Treatment BMPs:**
- ☐ Sediment basin with skimmer
- ☐ Sediment basin ratio of 4:1 or greater (flow length to basin width)
- ☐ Sediment basin with 4-7 day detention
- ☐ Flocculants
- ☒ Compost Filter Socks
- ☐ Compost Filter Sock Sediment Basin
- ☒ RCE w/ Wash Rack

☐ **Land disposal:**
- ☐ Vegetated filters
- ☐ Riparian buffers <150ft.
- ☐ Riparian Forest Buffer <150ft.
- ☐ Immediate stabilization

☒ **Pollution prevention:**
- ☒ PPC Plans
- ☐ Street sweeping
- ☐ Channels, collectors and diversions lined with permanent vegetation, rock, geotextile or other non-erosive materials

☐ **Stormwater reuse technologies:**
- ☐ Sediment basin water for dust control
- ☐ Sediment basin water for irrigation

☒ **Other <u>Rock construction entrances with wash rocks, compost filter sock, and erosion control blanket, placed within 100 feet of streams.</u>**

Are the ABACT BMPs selected sufficient to minimize E&S discharges to the extent that existing or designated surface water uses are protected?

☒ Yes ☐ No

If yes, Antidegradation analysis is complete.
If no, NOI Application will be returned to the Applicant.

PCSM/SR Plan

☒ **Treatment BMPs:**
- ☒ Infiltration Practices
- ☐ Wet ponds
- ☐ Created wetland treatment systems
- ☐ Vegetated swales
- ☐ Manufactured devices
- ☐ Bio-retention/infiltration
- ☐ Green Roofs

☐ **Land disposal:**
- ☐ Vegetated filters
- ☐ Riparian Buffers <150ft.
- ☐ Riparian Forest Buffer <150ft.
- ☐ Disconnection of roof drainage
- ☐ Bio-retention/bio-infiltration

☒ **Pollution prevention:**
- ☐ Street sweeping
- ☐ Nutrient, pesticide, herbicide or other chemical application plan alternatives
- ☒ PPC Plans
- ☐ Non-structural Practices
- ☒ Restoration BMPs

☐ **Stormwater reuse technologies:**
- ☐ Divert rainwater into impoundment
- ☐ Underground storage

☐ Spray/Drip Irrigation

☐ **Other** _____

Are the ABACT BMPs selected sufficient to achieve no net change and assure that existing or designated surface water uses are protected?

☒ Yes ☐ No

If yes, Antidegradation analysis is complete.
If no, NOI Application will be returned to the Applicant.

SECTION J. COMPLIANCE HISTORY REVIEW

Is/was the applicant(s) in violation of any Department regulation, order, schedule of compliance or permit or in violation of any department regulated activities within the past five years?

☒ Yes ☐ No

If yes, provide the permit number or facility name, a brief description of the violation, the compliance schedule (including dates and steps to achieve compliance) and the current compliance status. (Attach additional information on a separate sheet, when necessary)

Permit Program or Activity: See Attachment 9 **Permit Number (if applicable):** _____

Brief Description of non-compliance:

Steps taken to achieve compliance	Date(s) compliance achieved

Current Compliance Status: ☐ In-Compliance ☐ In Non-Compliance

If in non-compliance, attach schedule for achieving compliance.

SECTION K. CERTIFICATION BY PERSON PREPARING E&S AND PCSM/SR PLANS

I do hereby certify to the best of my knowledge, information, and belief, that the Erosion and Sediment Control and PCSM/Site Restoration Plans are true and correct, represent actual field conditions, and are in accordance with the 25 Pa. Code Chapters 78/78a and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Print Name Robert Simcik	Signature	Professional Seal
Company Tetra Tech, Inc.		
Address 661 Andersen Drive, Suite 200, Pittsburgh, PA 15220		
Phone 412-921-8163		
Most Recent DEP Training Attended	Location Greensburg, PA	Date 04/03/2014
e-Mail Address robert.simcik@tetratech.com		

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ROBERT F. SIMCIK
ENGINEER
PE-[illegible]0435-E
2/22/14

EXPEDITED REVIEW PROCESS

In addition to the certification required above, applicants using the expedited permit review process must attach an E&S and PCSM/Site Restoration Plans developed and sealed by a licensed professional engineer, surveyor or professional geologist. The plans shall contain the following certification:

I do hereby certify to the best of my knowledge, information, and belief, that the E & S Control and PCSM/SR BMPs are true and correct, represent actual field conditions and are in accordance with the 25 Pa. Code Chapters 78 / 78a and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SECTION L. APPLICANT CERTIFICATION

Applicant Certification

I certify under penalty of law, as provided by 18 Pa. C.S.A. § 4904, that this application and all related attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my own knowledge and on inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. The responsible official's signature also verifies that the activity is eligible to participate in the ESCGP, and that the applicant agrees to abide by the terms and conditions of the permit. BMP's, E&S Plan, PPC Plan, PCSM Plan, and other controls are being or will be, implemented to ensure that water quality standards and effluent limits are attained.

I grant permission to the agencies responsible for the permitting of this work, or their duly authorized representative to enter the project site for inspection purposes. I will abide by the conditions of the permit if issued and will not begin work prior to permit issuance.

(For individuals no indication of title is necessary, choose the box below. All others proceed to the next paragraph)

☐ **Individual; proceed to signature portion.**

I hereby certify under penalty of law, as provided by 18 Pa. C.S.A. § 4904, that I am the person who is responsible for decision-making regarding environmental compliance functions for Enter Entity name, the manager of one or more manufacturing, production, or operating facilities of the applicant and am authorized to make management decisions which govern the operation of regulated facility including having explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure the applicant's long term environmental compliance with environmental laws and regulations; and I am responsible for ensuring that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements.

(choose one of the following; not applicable for individuals):

☐ The responsible corporate officer ☐ president ☐ vice president ☐ secretary
☐ treasure of _____ Corporation/Company
Entity name

☐ The ☐ member or ☐ manager of _____ LLC
Entity name

☐ The general partner of _____ partnership/LP/LLP
Entity name

☐ The principal executive officer or ranking elected official of _____ Municipality/State/Federal/other public agency
Entity name

☐ Power of Attorney/delegation of contractual authority (documentation supporting delegation of contracting authority must be provided) for _____
Entity name

Matthew Gordon, Senior Director
Print Name and Title of Applicant

Signature of Applicant

2/26/2019
Date Application Signed

David E. Bell, VP of Estimating
Print Name and Title of Co-Applicant (if applicable)

Signature of Co-Applicant

Date Application Signed

Notarization
Sworn to and subscribed to before me this
26TH day of FEBRUARY, 2019

Ronald J. Furman
Notary Public

Commonwealth of Pennsylvania
County of BERKS

My Commission expires APRIL 4, 2020

AFFIX SEAL

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Ronald J. Furman, Notary Public
Spring Twp., Berks County
My Commission Expires April 4, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

(choose one of the following; not applicable for individuals):

☐ The responsible corporate officer ☐ president ☐ vice president ☐ secretary
☐ treasure of _____ Corporation/Company
Entity name

☐ The ☐ member or ☒ manager of Precision Pipeline LLC
Entity name

☐ The general partner of _____ partnership/LP/LLP
Entity name

☐ The principal executive officer or ranking elected official of _____ Municipality/State/Federal/other public agency
Entity name

☐ Power of Attorney/delegation of contractual authority (documentation supporting delegation of contracting authority must be provided) for _____
Entity name

Matthew Gordon, Senior Director
Print Name and Title of Applicant

_____
Signature of Applicant

_____
Date Application Signed

David E. Bell, VP of Estimating
Print Name and Title of Co-Applicant (if applicable)

P.P. _____
Signature of Co-Applicant

_____
Date Application Signed

Notarization
Sworn to and subscribed to before me this
1 day of March, 20 19

Nicole M Black
Notary Public

Commonwealth ~~of Pennsylvania~~ Wisconsin
County of Chippewa
My Commission expires 9/15/19

AFFIX SEAL

NICOLE M BLACK
NOTARY
PUBLIC
STATE OF WISCONSIN

SECTION M. ADDITIONAL CONTACT INFORMATION				
Contact's Last Name Simcik	First Name Robert	MI	Phone 412-921-8163 FAX 412-921-4040	
Mailing Address 661 Andersen Drive, Suite 200	City Pittsburgh		State PA	ZIP + 4 15220
e-Mail Address Robert.Simcik@tetratech.com				

ATTACHMENT 1:

Site Directions

Major Modification-Horse Valley

Perry County

From the DEP Southcentral Regional Office to 6790 Horse Valley Road, New Germantown, PA:

Head west on Elmerton Ave (0.1 mi). Turn right onto US-22 W (0.9 mi). Keep left at the fork, and follow signs for I-81S (6.4 mi). Take exit 61 for PA-944 (7.3 mi). Continue on Sunnyside Drive (1.1 mi). At the traffic circle take the second exit onto Spring Road/Rt 34 (5.2 mi). Turn left on PA-850 W (9.5 mi). Turn left one PA-274W (13.4 mi). Turn right on Germantown Road (2.6 mi). continue straight onto Concord Road (4.7 mi). Turn right onto Horse Valley Road (1.0 mi).

From the Perry County Conservation District to 6790 Horse Valley Road, New Germantown, PA:

Head southwest on PA-274W (22.6 mi). Turn right on Germantown Road (2.6 mi). continue straight onto Concord Road (4.7 mi). Turn right onto Horse Valley Road (1.0 mi).

Major Modification -Piney Creek

Blair County

From the DEP Southwest Regional Office to 600 Lower Piney Creek Rd, Williamsburg, PA 16693:

Head south on Waterfront Drive (0.2 mi). Continue straight onto 30th St Bridge (472 ft). Turn right onto River Ave (154 ft). Turn left onto 31st ST Bridge (164 ft). Turn left to merge onto PA-28 S (0.2 mi). Merge onto PA-28 S (0.9 mi). Use the middle lane to take exit 1A for Interstate 579 S/Interstate 376 E (0.3 mi). Continue onto I-579 S (0.9 mi). Take the exit toward I-376 E/Oakland/Monroeville (0.3 mi). Continue onto Boulevard of the Allies (1.0 mi). Use the right lane to merge onto I-376 E via the ramp to Monroeville (12.7 mi). Continue onto US-22 E (75.6 mi). Keep left at the fork and merge onto I-99N (4.2 mi). Take Exit 32 for Frankstown Road toward PA-36 (0.4 mi). Continue onto Frankstown Road (3.7 mi). Continue straight onto Reservoir Road (318ft). Turn left on Locke Mt. Road (6.7 mi). Turn left on Lower Piney Creek Road (0.9 mi). Destination will be on the left.

From the Blair County Conservation District to 600 Lower Piney Creek Rd, Williamsburg, PA 16693:

Head southwest on Blair Street toward Spring street (482ft). Turn right onto Spring street (0.1 mi). Turn Right onto Allegheny Street (0.2 mi). Slight left onto US-22 E (1.8 mi). Continue straight onto Reservoir Road (318ft). Turn left on Locke Mt. Road (6.7 mi). Turn left on Lower Piney Creek Road (0.9 mi). Destination will be on the left.

Detailed Written Directions to the Site

Blair County

From the DEP South Central Regional Office to Locke Mountain Road Block Valve site (approximately 4 Locke Mountain Road, Hollidaysburg, PA 16648)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (55.9 mi). Take the US-22 W/US-522 S exit on the left toward Mt Union (0.6 mi). Continue onto US-22 W/US-522 S (58.7 mi). Turn left onto Old Rte 22/Reservoir Rd (269 ft). Turn left onto Locke Mt Rd (0.4 mi). Slight right onto Locke Mountain Rd. The Juniata River West block valve will on the left hand side about 1 mile down the road.

Huntingdon County

From the DEP South Central Regional Office to Happy Hills Road Block Valve site (approximately 0.3 mi south of 14987 Happy Hills Road, Huntingdon, PA 16652)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (55.9 mi). Take the US-22 W/US-522 S exit on the left toward Mt Union (0.6 mi). Continue onto US-22 W/US-522 S (29.2 mi). Turn left onto PA-829 S (6.8 mi). Turn right onto Happy Hills Rd. The Happy Hills Road Block Valve will be on the left hand side about 1.4 miles down the road.

From the DEP South Central Regional Office to the Pennsylvania 655 Block Valve site.

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (55.9 mi). Take the US-22 W/US-522 S exit on the left toward Mt Union (0.6 mi). Continue onto US-22 W/US-522 S (25.0 mi). Slight left onto Oriskany Rd (0.8 mi). Turn left onto PA-655 S/Bridge St (0.2 mi). Slight right onto Main St (0.1 mi). Turn left onto Campbell St (0.3 mi). Campbell St turns slightly left and becomes PA-655 S. The Pennsylvania 655 Block Valve will be on the left side approximately 3.1 miles down the road.

Juniata County

From the DEP South Central Regional Office to the Pennsylvania- 75 road crossing. (Approximately 2982 Pennsylvania 75, East Waterford, PA 17021)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (40.2 mi). Take the Pennsylvania 75 exit toward Port Royal (0.2 mi). Keep right at the fork and merge onto PA-75 S (3.0 mi). Slight right to stay on PA-75 S. The pipe crosses Pennsylvania 75 approximately 23.0 miles down the road.

Perry County

From the DEP South Central Regional Office to the Doylesburg Station. (Approximately Pennsylvania-274 West/ West Main Street)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (0.4 mi). Take the US-322 E/I-81 N/I-78 ramp to Hazleton/Allentown (0.2 mi). Keep left at the fork, follow signs for I-81 S/Carlisle and merge onto I-81 S (7.7 mi). Keep right at the fork to stay on I-81 S (2.6 mi). Take exit 57 for PA-114 toward Mechanicsburg (0.3 mi). Turn right onto PA-114 W (signs for Wertzville Rd) (1.0 mi). Turn left onto PA-944 W (3.4 mi). Continue onto Sunnyside Dr. (1.1 mi). At the traffic circle, take the 2nd exit and stay on Sunnyside Dr (322 ft). Continue onto PA-34 N (5.1 mi). Turn left onto PA-850 W (6.6 mi). Turn right onto PA-850 W/Carlisle St (2.9 mi). Turn left onto PA-274 W/PA-850 W (9.7 mi). Turn left onto PA-274 W/W Main St. The Doylesburg Station will be on the left hand side approximately 6.7 miles down the road.

Cumberland County

From the DEP South Central Regional Office to the Creek Road/Conodonquinet River Block Valve (Approximately 100 Creek Road, Carlisle, PA 17013)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (0.4 mi). Take the US-322 E/I-81 N/I-78 ramp to Hazleton/Allentown (0.2 mi). Keep left at the fork, follow signs for I-81 S/Carlisle and merge onto I-81 S (0.8 mi). Merge onto I-81 S (6.8 mi). Keep right at the fork to stay on I-81 S (8.0 mi). Take exit 52 for US-11 toward I-76/New Kingstown/Middlesex (0.3 mi). Turn right onto US-11 S (0.6 mi). Turn right onto N Middlesex Rd (0.3 mi). Turn left onto Clemson Dr (1.3 mi). Turn right onto Wolf Bridge Rd (0.7 mi). Turn left onto W Middlesex Dr (0.6 mi). Turn left onto Spring Rd (0.4 mi). Turn right onto Creek Rd. The Creek Road Block Valve will be on the right side approximately 0.2 miles down the road.

York County

From the DEP South Central Regional Office to the Old York Road Block Valve (Approximately 429 Old York Road, New Cumberland, PA 17070)

Head southwest on Elmerton Ave (0.2 mi). Turn left onto N Cameron St (0.6 mi). Continue straight onto PA-230 E/N Cameron St (2.0 mi). Turn left onto Paxton St (0.2 mi). Turn right onto S 13th St (302 ft). Turn right onto the Interstate 83 S ramp to York (0.2 mi). Merge onto I-83 S (1.5 mi). Keep right at the fork to stay on I-83 S, follow signs for Interstate 83 S/Interstate 76/Penna Turnpike/York/Baltimore (3.98 mi). Take exit 38 toward Reesers/Summit (279 ft). Turn left onto Pleasant View Rd (0.4 mi). Turn left onto Gurtner Rd (0.6 mi). Turn left onto Park Rd (0.4 mi). Turn right onto Old York Rd. The Old York Block Valve Site will be on the left approximately 0.2 miles down the road.

Dauphin County

From the DEP South Central Regional Office to the Middletown Station (Approximately 1320 North Union Street, Middletown, PA 17057)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (0.4 mi). Take the US-322 E/I-81 N/I-78 ramp to Hazleton/Allentown (0.7 mi). Keep right at the fork to continue on US-322 E, follow signs for I-83 S/Hershey York (0.5 mi). Continue onto I-83 S (3.7 mi). Keep left at the fork to continue on I-283 S, follow signs for Interstate 283 S/Interstate 76/Pennsylvania Turnpike/Airport (2.9 mi). Take exit 1A to merge onto PA-283 E toward Airport/Lancaster (2.6 mi). Take the N Union St exit toward Fulling Mill Rd (0.3 mi). Turn right onto N Union St. The Middletown Station will be on the left approximately 0.9 miles down the road.

Lebanon County

From the DEP South Central Regional Office to the Schaeffer Road Block Valve (Approximately State Drive, South Lebanon, PA)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (0.4 mi). Take the US-322 E/I-81 N/I-78 ramp to Hazleton/Allentown (0.7 mi). Merge onto I-81 N/US-322 E (1.8 mi). Keep right at the fork to continue on US-322 E, follow signs for I-83 S/Hershey York (0.5 mi). Continue onto I-83 S/US-322 E (3.0 mi). Take exit 47 for US-322 E toward Hershey (0.4 mi). Continue onto US-322 E (0.4 mi). Take the ramp to U.S. 322 E/Hershey (0.5 mi). Continue onto US-322 E (6.5 mi). Merge onto US-322 E/W Governor Rd via the ramp to Ephrata (13.1 mi). Turn left onto PA-419 N (1.9 mi). Turn left onto PA-419 N/Schaeffer Rd (2.0 mi). Once you pass State Drive, make left down the second drive/lane. The Schaeffer Road Block Valve is down the drive approximately 0.15 miles.

Lancaster County

From the DEP South Central Regional Office to the Blainsport Station (Approximately 1924 State Route 1057, Reinholds, PA 17569)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (0.4 mi). Take the US-322 E/I-81 N/I-78 ramp to Hazleton/Allentown (0.7 mi). Merge onto I-81 N/US-322 E (1.8 mi). Keep right at the fork to continue on US-322 E, follow signs for I-83 S/Hershey York (0.5 mi). Continue onto I-83 S (3.7 mi). Keep left at the fork to continue on I-283 S, follow signs for Interstate 283 S/Interstate 76/Pennsylvania Turnpike/Airport (3.1 mi). Take exit 266-359 on the left to merge onto I-76 E toward Philadelphia (19.2 mi). Take exit 266 toward PA-72 N (0.6 mi). Turn left onto PA-72 N (2.6 mi). Take the Pennsylvania 72 N exit toward Lebanon (0.3 mi). Continue onto Quentin Rd (0.3 mi). Turn right onto E Main St (0.2 mi). Continue onto Freeman Dr (1.0 mi). Freeman Dr turns right and becomes Cornwall Rd (361 ft). Turn left onto PA-419 N/Schaeffer Rd (6.7 mi). Continue

onto PA-897 S/Heidelberg Ave/E Main St (8.5 mi). Sharp left onto Texter Mountain Rd (361 ft). The Blainsport Station will be on the right hand side about 750 feet off the road.

Berks County

From the DEP South Central Regional Office to the Wyomissing Road Block Valve (Approximately 1558 Wyomissing Road, Mohnton, PA 19540)

Head southwest on Elmerton Ave (0.2 mi). Turn right onto US-22 W (signs for I-81/US-322/Carlisle 22/Lewistown 55/Hazleton 80) (0.4 mi). Take the US-322 E/I-81 N/I-78 ramp to Hazleton/Allentown (0.7 mi). Merge onto I-81 N/US-322 E (1.8 mi). Merge onto I-81 N/US-322 E (1.8 mi). Keep right at the fork to continue on US-322 E, follow signs for I-83 S/Hershey York (0.5 mi). Continue onto I-83 S (3.7 mi). Keep left at the fork to continue on I-283 S, follow signs for Interstate 283 S/Interstate 76/Pennsylvania Turnpike/Airport (2.9 mi). Take exit 1A to merge onto PA-283 E toward Airport/Lancaster (29.0 mi). Merge onto U.S. 30 E (1.3 mi). Keep right at the fork to continue on US-222 N, follow signs for Route 222 (19.5 mi). Take the PA-272 S exit toward PA-568 E/Adamstown/Knauers (0.3 mi). Turn right onto Alleghenyville Rd (2.1 mi). Turn left onto PA-625 N (0.7 mi). Turn left onto Wyomissing Rd. The Wyomissing Block Valve will be on the right approximately 0.4 miles down the road.

ATTACHMENT 2:

Municipalities Table

Section didn't change as a result of the Major Modification

Municipalities

Pennsylvania Pipeline Project

South-Central Region

County	Muncipality
Blair	Juniata Township
	Allegheny Township
	Blair Township
	Frankstown Township
	Woodbury Township
Huntingdon	Penn Township
	Union Township
	Shirley Township
	Tell Township
Juniata	Lack Township
Perry	Toboyne Township
	Jackson Township
Cumberland	Lower Mifflin Township
	Upper Frankford Township
	Lower Frankford Township
	North Middleton Township
	Middlesex Township
	Silver Spring Township
	Monroe Township
	Upper Allen Township
	Lower Allen Township
York	Fairview Township
Dauphin	Highspire Borough
	Lower Swatara Township
	Middletown Borough
	Londonderry Township
	Derry Township
	Conewago Township
Lebanon	South Londonderry Township
	South Annville Township
	West Cornwall Township
	Cornwall Borough
	South Lebanon Township
	Heidelberg Township
Lancaster	Clay Township
	West Cocalico Township
Berks	South Heidelberg Township
	Spring Township
	Cumru Township
	Brecknock Township
	Robeson Township
	New Morgan Borough
	Caernarvon Township

ATTACHMENT 3:

Water/Watershed Table

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Blair Run (5)	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Blair Run	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Poplar Run (1)	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Dry Run (2)	Blair	Juniata	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Dry Run (20)	Blair	Juniata	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Blair Gap Run (1)	Blair	Juniata	TROUT STOCKING	TSF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Beaverdam Branch (3)	Blair	Blair	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Frankstown Branch Juniata River (15)	Blair	Blair	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Frankstown Branch Juniata River (2)	Blair	Blair	WARM WATER FISHES	WWF	Yes	Industrial Point Source-Siltation	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Frankstown Branch Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No	Industrial Point Source-Siltation	No	N/A
UNT to Oldtown Run (11)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Oldtown Run	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Robinson Run (8)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Juniata River (22)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Frankstown Branch Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	Yes	Industrial Point Source-Suspended Soilds	No	N/A
UNT to Piney Creek (6)	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Piney Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Clover Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Raystown Branch Juniata River (37)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
James Creek	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to James Creek (13)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Raystown Lake (9)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Little Trough Creek (7)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Little Trough Creek	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Smith Run (11)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Smith Run	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Hares Valley Creek (9)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Hares Valley Creek	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Scrub Run	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Scrub Run (1)	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Singers Gap Run	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Singers Gap Run (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hill Valley Creek (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Hill Valley Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Juniata River (3)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Aughwick Creek (8)	Huntingdon	Shirley	TROUT STOCKING	TSF	No	N/A	No	N/A
Aughwick Creek (2)	Huntingdon	Shirley	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Fort Run (7)	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes	N/A	No	N/A
Fort Run	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes	N/A	No	N/A
UNT to Blacklog Creek (6)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Blacklog Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to George Creek (19)	Huntingdon	Tell	COLD WATER FISHES	CWF	No	N/A	No	N/A
George Creek	Huntingdon	Tell	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to George Creek (7)	Juniata	Lack	COLD WATER FISHES	CWF	No	N/A	No	N/A
George Creek	Juniata	Lack	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Tuscarora Creek (20)	Juniata	Lack	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Tuscarora Creek	Juniata	Lack	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Horse Valley Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Horse Valley Run (7)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Shermans Creek (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shermans Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Shultz Creek (4)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shultz Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Shaeffer Run (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shaeffer Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Bull Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Laurel Run	Perry	Jackson	EXCEPTIONAL VALUE	EV	Yes	Atmospheric Deposition-Metals	No	N/A
UNT to Laurel Run (7)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
UNT to South Branch Laurel Run (1)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
South Branch Laurel Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
UNT to Double Gap Creek (12)	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Doubling Gap Creek	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Double Gap Creek (2)	Cumberland	Upper Frankford	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Rock Run	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Rock Run (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (8)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Bloser Creek (5)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
Bloser Creek	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Locust Creek (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Locust Creek (8)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
Locust Creek	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (3)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Opossum Creek (9)	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No	N/A	No	N/A
Opossum Creek	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No	N/A	No	N/A
UNT to Conodoguinet Creek (30)	Cumberland	North Middleton	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation; Construction- Siltation; Habitat Modification-Flow Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Meetinghouse Run (5)	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
Meetinghouse Run	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
Conodoguinet Creek	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (13)	Cumberland	Middlesex	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Letort Spring Run (3)	Cumberland	Middlesex	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Letort Spring Run (3)	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No	N/A	No	N/A
Letort Spring Run	Cumberland	Middlesex	COLD WATER FISHES	CWF	No	N/A	No	N/A
Letort Spring Run	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (10)	Cumberland	Middlesex	WARM WATER FISHES	WWF	No	N/A	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
Hogestown Run	Cumberland	Silver Spring	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Trindle Spring Run	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Trindle Spring Run (1)	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Yellow Breeches Creek (13)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cedar Run (5)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes	Source Unknown- Pathogens	No	N/A
Yellow Breeches Creek	Cumberland	Lower Allen	COLD WATER FISHES	CWF	No	N/A	No	N/A
Yellow Breeches Creek	York	Fairview	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Yellow Breeches Creek (12)	York	Fairview	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Marsh Run (8)	York	Fairview	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Susquehanna River (9)	York	Fairview	WARM WATER FISHES	WWF	No	N/A	No	N/A
Susquehanna River	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	Yes	Source Unknown- PCB	No	N/A
UNT to Lisa Lake (9)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Susquehanna River (2)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	Urban Runoff/Storm Sewers- Cause Unknown; Habitat Modification- Cause Unknown	No	N/A
UNT to Swatara Creek (11)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	N/A	No	N/A
Swatara Creek	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Swatara Creek (3)	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Swatara Creek (6)	Dauphin	Londonderry	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation; Other- Siltation	No	N/A
UNT to Iron Run (3)	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Iron Run (13)	Dauphin	Derry	WARM WATER FISHES	WWF	No	N/A	No	N/A
Iron Run	Dauphin	Derry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Iron Run	Dauphin	Conewago	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Spring Creek (23)	Dauphin	Conewago	WARM WATER FISHES	WWF	Yes	Agriculture- Organic Enrichment/Low D.O.; Agriculture- Siltation	No	N/A
UNT to Spring Creek (7)	Lebanon	South Londonderry	WARM WATER FISHES	WWF	Yes	Agriculture- Organic Enrichment/Low D.O.; Agriculture- Siltation	No	N/A
UNT to Killinger Creek (8)	Lebanon	South Londonderry	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Buckholder Run (5)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Buckholder Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Gingrich Run (4)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Gingrich Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Bachman Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients; Crop Related- Siltation	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Beck Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
Snitz Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Snitz Creek (1)	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Quittapahilla Creek (1)	Lebanon	South Lebanon	TROUT STOCKING	TSF	Yes	Urban Runoff/Storm Sewers- Flow Alterations; Bank Modifications- Other Habitat Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Hammer Creek (6)	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Hammer Creek	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Middle Creek	Lebanon	Heidelberg	WARM WATER FISHES	WWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Middle Creek (5)	Lebanon	Heidelberg	WARM WATER FISHES	WWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cocalico Creek (9)	Lancaster	Clay	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cocalico Creek (22)	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
Cocalico Creek	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
Harnish Run	Lancaster	West Cocalico	WARM WATER FISHES	WWF	Yes	Habitat Modification; Other Habitat Alterations; Source Unknown- Pathogens	No	N/A
UNT to Harnish Run (3)	Lancaster	West Cocalico	WARM WATER FISHES	WWF	Yes	Habitat Modification; Other Habitat Alterations; Source Unknown- Pathogens	No	N/A
UNT to Little Cocalico Creek (4)	Lancaster	West Cocalico	TROUT STOCKING	TSF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Little Cocalico Creek (5)	Berks	South Heidelberg	TROUT STOCKING	TSF	No	N/A	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Cacoosing Creek (8)	Berks	South Heidelberg	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Cacoosing Creek	Berks	South Heidelberg	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Cacoosing Creek (15)	Berks	Spring	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Little Muddy Creek	Berks	Spring	TROUT STOCKING	TSF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Wyomissing Creek (13)	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	Yes	Source Unknown-Pathogens	Yes	Cause Unknown; Siltation
Wyomissing Creek	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	Yes	Source Unknown-Pathogens	Yes	Cause Unknown; Siltation
Allegheny Creek	Berks	Brecknock	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Allegheny Creek (19)	Berks	Brecknock	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Sleepy Hollow Run (2)	Berks	Brecknock	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Sleepy Hollow Run (2)	Berks	Brecknock	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Rock Run (8)	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
Rock Run	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
UNT to Rock Run	Berks	Robeson	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
Hay Creek	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No	N/A	No	N/A
Hay Creek	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hay Creek (12)	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hay Creek (12)	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No	N/A	No	N/A
UNT to Hay Creek	Berks	New Morgan	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Conestoga River (1)	Berks	New Morgan	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other-Organic Enrichment/Low D.O.; Source Uknown-Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.
UNT to East Branch Conestoga River (12)	Berks	New Morgan	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other-Organic Enrichment/Low D.O.; Source Uknown-Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
East Branch Conestoga River	Berks	Caernarvon	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other- Organic Enrichment/Low D.O.; Source Uknown- Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
BLAIR COUNTY			
Juniata	UNT to Blair Run	4	1 (Wild Trout)
Juniata	UNT to Dry Run	16	6 (Wild Trout)
Blair	UNT to Dry Run	5	2 (Wild Trout)
Blair	UNT to Beaverdam Branch	2	0
Blair	UNT to Frankstown Branch Juniata River	21	3 (Wild Trout)
Frankstown	UNT to Oldtown Run	9	3 (Wild Trout)
Frankstown	UNT to Robinson Run	7	0
Frankstown	UNT to Frankstown Branch Juniata River	41	10 (Wild Trout)
Woodbury	UNT to Piney Creek	3	1 (Wild Trout)
Woodbury	UNT to Clover Creek	2	2 (Wild Trout)
HUNTINGDON COUNTY			
Penn	UNT to James Creek	28	0
Penn	UNT to Raystown Branch Juniata River	2	0
Union	UNT to Little Trough Creek	10	0
Union	UNT to Smith Run	5	0
Union	UNT to Hares Valley Creek	7	0
Union	UNT to Scrub Run	3	0
Shirley	UNT to Singers Gap Run	2	0
Shirley	UNT to Juniata River	4	0
Shirley	UNT to Aughwick Creek	6	0
Shirley	UNT to Fort Run	9	0
Shirley	UNT to Blacklog Creek	11	0
Tell	UNT to George Creek	14	0
JUNIATA COUNTY			
Lack	UNT to George Creek	2	0
Lack	UNT to Tuscarora Creek	5	0
PERRY COUNTY			
Toboyne	UNT to Horse Valley Run	2	2 (Wild Trout)
Toboyne	UNT to Sherman Creek	7	4 (Wild Trout)
Toboyne	UNT to Shultz Creek	4	4 (Wild Trout)
Toboyne	UNT to Schaeffer Run	4	1 (Wild Trout)
Jackson	UNT to South Branch Laurel Run	6	3 (Wild Trout); 1 (WT/EV Stream)

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
CUMBERLAND COUNTY			
Lower Mifflin	UNT to Doubling Gap Creek	11	0
Upper Frankford	UNT to Doubling Gap Creek	1	0
Upper Frankford	UNT to Rock Run	2	0
Upper Frankford	UNT to Conodoguinet Creek	10	0
Upper Frankford	UNT to Bloser Creek	14	0
Upper Frankford	UNT to Locust Creek	1	0
Lower Frankford	UNT to Locust Creek	10	1 (PuWS)
Lower Frankford	UNT to Opossum Creek	13	0
Lower Frankford	UNT to Conodoguinet Creek	10	0
North Middleton	UNT to Conodoguinet Creek	6	0
North Middleton	UNT to Meetinghouse Run	2	1 (PuWS)
North Middleton	UNT to Conodoguinet Creek	23	5 (PuWS)
Middlesex	UNT to Conodoguinet Creek	9	0
Middlesex	UNT to Letort Spring Run	5	3 (Wild Trout)
Silver Spring	UNT to Hogestown Run	2	0
Upper Allen	Unt to Yellow Breeches Creek	5	0
Lower Allen	UNT to Cedar Run	2	1 (Wild Trout)
Lower Allen	Unt to Yellow Breeches Creek	8	0
YORK COUNTY			
Fairview	Unt to Yellow Breeches Creek	7	0
Fairview	UNT to Marsh Run	4	0
Fairview	UNT to Susquehanna River	17	0
DAUPHIN COUNTY			
Lower Swatara	UNT to Susquehanna River	13	0
Highspire	UNT to Susquehanna River	2	0
Lower Swatara	UNT to Swatara Creek	3	0
Middletown	UNT to Swatara Creek	3	0
Londonderry	UNT to Swatara Creek	18	0
Londonderry	UNT to Iron Run	1	0
Derry	UNT to Iron Run	8	0
Conewago	UNT to Spring Creek	12	0

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
LEBANON COUNY			
South Londonderry	UNT to Spring Creek	4	0
South Londonderry	UNT to Killinger Creek	3	0
South Annville	UNT to Buckholder Run	5	0
South Annville	UNT to Gingrich Run	2	0
West Cornwall	UNT to Beck Creek	2	0
West Cornwall	UNT to Snitz Creek	2	0
South Lebanon	UNT to Quittapahilla Creek	1	0
South Lebanon	UNT to Hammer Creek	1	1 (Wild Trout)
Heidelberg	UNT to Hammer Creek	6	3 (Wild Trout)
Heidelberg	UNT to Middle Creek	5	0
LANCASTER COUNTY			
West Cocalico	UNT to Cocalico Creek	19	5 (Bog Turtle)
West Cocalico	UNT to Harnish Run	4	0
West Cocalico	UNT to Little Cocalico Creek	6	0
BERKS COUNTY			
South Heidelberg	UNT to Little Cocalico Creek	5	0
South Heidelberg	UNT to Cacoosing Creek	14	8 (Wild Trout)
Spring	UNT to Cacoosing Creek	7	2 (Wild Trout)
Spring	UNT to Little Muddy Creek	7	0
Cumru	UNT to Wyomissing Creek	8	2 (Wild Trout); 1 (WT/Bog Turtle)
Brecknock	UNT to Allegheny Creek	16	12 (Wild Trout)
Brecknock	UNT to Rock Run	4	2(Wild Trout)
New Morgan	UNT to Hay Creek	11	3 (Wild Trout/EV Stream)
Caernarvon	UNT to East Branch Conestoga River	9	0

ATTACHMENT 4:

Storm Sewer Operator Table

Section didn't change as a result of the Major Modification

Municipal Separate Storm Sewer Operators

Pennsylvania Pipeline Project

South-Central Region

MUNICIPALITY	TYPE	COUNTY	STATUS	PERMIT NUMBER	APPROVED
FRANKSTOWN	Township	Blair	General	PAG133661	11/17/2003
BLAIR	Township	Blair	General	PAG133597	11/17/2003
ALLEGHENY	Township	Blair	General	PAG133693	10/26/2006
JUNIATA	Township	Blair	Waiver	PAG133631	3/4/2005
MONROE	Township	Cumberland	General	PAG133573	12/9/2004
UPPER ALLEN	Township	Cumberland	General	PAG133708	7/23/2008
SILVER SPRING	Township	Cumberland	Individual	PAI133514	1/22/2004
LOWER ALLEN	Township	Cumberland	Individual	PAI133511	1/22/2004
FAIRVIEW	Township	York	General	PAG133557	11/23/2004
HIGHSPIRE	Borough	Dauphin	General	PAG133544	12/2/2004
LONDONDERRY	Township	Dauphin	General	PAG133547	12/9/2004
MIDDLETOWN	Borough	Dauphin	General	PAG133645	12/3/2004
DERRY	Township	Dauphin	General	PAG133637	12/1/2004
LOWER SWATARA	Township	Dauphin	General	PAG133543	12/3/2004
CONEWAGO	Township	Dauphin	Waiver	PAG133621	10/24/2006
WEST COCALICO	Township	Lancaster	General	PAG133542	1/27/2004
CLAY	Township	Lancaster	Individual	PAI133510	1/29/2004
SOUTH LONDONDERRY	Township	Lebanon	General	PAG133546	1/28/2005
SOUTH ANNVILLE	Township	Lebanon	Waiver	PAG133623	11/2/2004
SOUTH LEBANON	Township	Lebanon	General	PAG133684	1/12/2005
CORNWALL	Borough	Lebanon	General	PAG133700	12/14/2004
WEST CORNWALL	Township	Lebanon	General	PAG133699	1/28/2005
BRECKNOCK	Township	Berks	Individual	PAI133508	1/21/2004
ROBESON	Township	Berks	General	PAG133525	11/10/2003
CUMRU	Township	Berks	Individual	PAI133507	1/21/2004
SOUTH HEIDELBERG	Township	Berks	General	PAG13709	
SPRING	Township	Berks	Individual	PAI133503	1/22/2004

ATTACHMENT 5:

Act 167 Tracking Table

Section didn't change as a result of the Major Modification

102-1 Block Valve and Pump Station PCSM Design Standard

Region	Site	Designed to meet regulator standards within 102.8(g)(2) and 102.8(g)(3) or Act 167	Act 167 compliance	Summary of Design Standard within Act 167 Plan
Block valve				
SWRO	Koontz Road	102.8(g)(2) and 102.8(g)(3)	Westmoreland County does not have an approved Act 167 Stormwater Management Plan	N/A
	Bush Road	102.8(g)(2) and 102.8(g)(3)	Westmoreland County does not have an approved Act 167 Stormwater Management Plan	N/A
	Newport Road	102.8(g)(2) and 102.8(g)(3)	Indiana County does not have an approved Act 167 Stormwater Management Plan	N/A
	Cooney Road	102.8(g)(2) and 102.8(g)(3)	Cambria County does not have an approved Act 167 Stormwater Management Plan	N/A
SCRO	Charger Highway	102.8(g)(2) and 102.8(g)(3)	Blair County does not have an approved Act 167 Stormwater Management Plan	N/A
	Valley Forge Road	102.8(g)(2) and 102.8(g)(3)	Blair County does not have an approved Act 167 Stormwater Management Plan	N/A
	Locke Mountain Road	102.8(g)(2) and 102.8(g)(3)	Blair County does not have an approved Act 167 Stormwater Management Plan	N/A
	High Street	102.8(g)(2) and 102.8(g)(3)	Blair County does not have an approved Act 167 Stormwater Management Plan	N/A
	Shade Valley Road	102.8(g)(2) and 102.8(g)(3)	Huntingdon County does not have an approved Act 167 Stormwater Management Plan	N/A
	Creek Road	Act 167	Cumberland County has a County-wide Act 167 with specific requirement for Lower Conodoguinet Creek watershed, where the block valve is located. The PCSM design at the Creek Road block valve has been designed for consistency with Cumberland County's approved Act 167 Plan. For more detail see the Cumberland County Act 167 verification report in Tab 5.	The Lower Conodoguinet Creek watershed has a 100% release rate. All design standards within Cumberland County's approved Act 167 Plan are met.
	Gates Road	Act 167	Dauphin County has a County-wide Act 167 plan with specific requirements for Spring Creek (East), where the block valve is located. The PCSM design at the Gates Road block valve site has been designed for consistency with Dauphin County's approved Act 167 Plan. For more detail see the Dauphin County Act 167 verification report in Tab 5.	This plan requires a 90% post development release rate for the 2, 10, and 25-year storm events. All design standards within Dauphin County's approved Act 167 Plan are met.
Pump Stations				
SWRO	Houston Injection	102.8(g)(2) and 102.8(g)(3)	N/A	N/A
	Delmont	102.8(g)(2) and 102.8(g)(3)	Westmoreland County does not have an approved Act 167 Stormwater Management Plan	N/A
	Ebensburg	102.8(g)(2) and 102.8(g)(3)	Cambria County does not have an approved Act 167 Stormwater Management Plan	N/A
SCRO	Mt. Union	102.8(g)(2) and 102.8(g)(3)	Huntingdon County does not have an approved Act 167 Stormwater Management Plan	N/A
	Doylesburg	102.8(g)(2) and 102.8(g)(3)	Perry County does not have an approved Act 167 Stormwater Management Plan	N/A
	Middletown	102.8(g)(2) and 102.8(g)(3)	N/A	N/A
	Beckersville	102.8(g)(2) and 102.8(g)(3)	Berks County does not have an approved Act 167 Stormwater Management Plan	N/A
SERO	Twin Oaks	102.8(g)(2) and 102.8(g)(3)	Delaware County does not have an approved Act 167 Stormwater Management Plan	N/A

ATTACHMENT 6:

RIPARIAN BUFFER WAIVER REQUEST INFORMATION

Attachment 6 - Riparian Buffer Waiver Request

Pennsylvania Pipeline Project - South Central Region: Spreads 3, 4, 5

Major Modification-Horse Valley

February 2019

Prepared for:

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Meeting Requirements of Chapter 102 4

LIST OF ATTACHMENTS

1 Table 1 – Riparian Buffer Waiver Information

2 Table 2- Riparian Buffer Considered Alternatives

LIST OF ACRONYMS

ACRONYM	MEANING
BMP	Best Management Practice
E&SC	Erosion and Sediment Control
EV	Exceptional Value
HQ	High Quality
LOD	Limit of Disturbance
PCSM	Post-Construction Stormwater Management
ROW	Right of way
SR	Sight Restoration

PENNSYLVANIA PIPELINE PROJECT - RIPARIAN BUFFER WAIVER REQUEST

The Pennsylvania Pipeline Project qualifies for an exemption of the riparian buffer requirement under Chapter 102.14(d)(1)(ix) for areas within the Chapter 105 permit area where the pipeline corridor crosses perpendicular to the riparian area. In addition to the exception, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area exemption. The E&S plan drawings located in Attachment 2 of the E&S report show the 150 foot riparian buffer areas along HQ/EV streams for which this waiver is being prepared. It is assumed that all riparian forest buffers consist predominantly of native trees, shrubs and forbs and provide at least 60% uniform canopy cover. The plans show the location and limits of the work and earth disturbance. Table 2 is provided as a summary and indication of the locations for which the waiver is being requested. Table 2 also indicates the designated use of the receiving water, if the water is impaired and if the water has a total maximum daily load, TMDL.

DEMONSTRATION OF WAIVER NECESSITY

A riparian buffer waiver is necessary to complete the intended scope of the pipeline project including the Major Modification. While conducting the permitted HDD for the 20-inch pipe under an Exceptional Value (EV) wetland/stream complex an unconfined aquifer was encountered resulting in groundwater within the annulus of the HDD. Following the submittal of additional studies, data, and reports specific to the completion of the 20-inch HDD and protection of the public water supply, the Pennsylvania Department of Environmental Protection approved the completion of the permitted 20-inch HDD.

As defined in Chapter 102 of the Pennsylvania Code, a riparian forest buffer consists of "permanent vegetation that is predominantly native trees, shrubs and forbs along a stream that is maintained in a natural state or sustainably managed to protect and enhance water quality, stabilize stream channels and banks, and separate land use activities from surface waters." In HQ watersheds, the riparian width is identified as 150 feet on both sides of a perennial or intermittent stream.

According to Chapter 102.14(d)(2)(ii), linear pipeline projects are eligible for a waiver from subsections (a) and (b) if the Project demonstrates there are reasonable alternatives for compliance with these subsections, the riparian buffer is undisturbed to the extent practicable, and the Project meets the requirement of this chapter. In addition, the Project must still satisfy the requirements in subsection (c) *(Compliance with Subsection–Mandatory Requirements for all Riparian Buffers)*

The following alternatives analysis presents how the Project complies with these requirements.

The Pennsylvania Pipeline Project qualifies for an exemption of the riparian forest buffer requirement under Chapter 102.14(d)(1)(ix) for areas within the Chapter 105 permit area. Existing riparian forest buffers within the project area are identified on the E&S plan drawings in Attachment 2 of the E&S Plan.

In addition to the exemption, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

Alternatives Analysis

Impacts to environmental resources, including riparian forest buffers, were evaluated during the pipeline routing phase of the project. Field teams were deployed to evaluate alternate routes based on environmental and constructability constraints. The final route that was selected minimizes environmental impacts to the maximum extent practicable while still maintaining the project's overall constructability and ensuring a safe working environment while also taking landowner constraints into consideration. Additionally, several variations of horizontal direction drill profiles were evaluated to minimize pullback areas, additional workspaces, and overall disturbance within riparian forest buffers. Permanent features, such as access roads and block valves, were evaluated to locate the features outside of the riparian forest buffer, where possible.

Demonstration of Minimizing Impacts

All disturbance activities, including those which impact riparian forest buffers, have been reduced to the maximum extent practicable. The LOD has been reduced to 50 feet wide at all stream crossings within the riparian forest buffer area where possible adjacent to the stream area required for crossing and construction. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian forest buffer, the LOD has been reduced to 50 feet wide within 10 feet of the stream banks to limit the proximity of the work areas as per the stream crossing detail from the PADEP manual. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control BMPs. In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian forest buffers where possible.

Meeting Requirements of Chapter 102

All other requirements of Chapter 102 to minimize impacts to riparian buffers are being met in the project's Erosion and Sediment Control Plan and Site Restoration/Post-Construction Stormwater Management Plans which have been designed in accordance with Chapter 102 and in HQ/EV watersheds to implement ABACT controls where non- discharge alternatives do not exist. In accordance with Chapter 102, and E&S plan has been developed to minimize the sediment entering the buffer areas through the use of properly designed E&S bmp's such as, but not limited to, waterbars, compost filter sock, diversion berms, slope pipes and erosion control blanket. A site restoration plan is proposed to revegetate the buffer areas within the right of way.

Table 1:
Riparian Buffer Waiver Information
Major Modification-Horse Valley

E&S SHEET NUMBER	STREAM NAME	PERPENDICULAR OR NON-PERPENDICULAR	E&S PLAN STATIONING	DESIGNATED USE	IMPAIRMENT	TMDL (Yes/No)	AREA OF BUFFER (ACRE)	LENGTH OF BUFFER (FEET)	WIDTH OF BUFFER (FEET)	LENGTH OF TIME OF DISTURBANCE
Perry										
ES-3.03	UNT to Horse Valley Run (S-Q68)	Perpendicular	08+50 through 10+00	HQ-CWF	NA	No	0.045	78	25	30 days, 24 hrs for in stream
ES-3.03	Horse Valley Run (S-L6)	Perpendicular	17+00 through 21+00	HQ-CWF	NA	No	0.373	217	75	30 days, 24 hrs for in stream

Note: The waiver requests are a direct result of locating the line within and adjacent to the existing right of way.

Table 2:
Alternative Information
Major Modification-Horse Valley

E&S Plan Sheet	STREAM NAME	PERPENDICULAR OR NON-PERPENDICULAR	DESIGNATED USE	AREA OF BUFFER (ACRE)	LENGTH OF BUFFER (FEET)	WIDTH OF BUFFER (FEET)	Alternative Considerations
Perry							
ES-3.03	UNT to Horse Valley Run	Perpendicular	HQ-CWF	0.045	78	25	Original ROW not viable. Major Modification re-route minimizes impacts to Waters of the Commonwealth
ES-3.03	UNT to Horse Valley Run	Perpendicular	HQ-CWF	0.373	217	75	Original ROW not viable. Major Modification re-route minimizes impacts to Waters of the Commonwealth

ATTACHMENT 7: DOA for Matthew Gordon

Section didn't change as a result of the Major Modification

Delegated Individual: **Matthew L. Gordon, Principal Engineer**
Project: **Sunoco Pipeline L.P. – Mariner East Pipeline**

I, David R. Chalson, Vice President of Sunoco Logistics Partners Operations GP LLC, the General Partner of Sunoco Pipeline L.P. hereby delegate to the above listed individual, authority to sign air quality permit applications and reports, that are submitted to government agencies regarding operations for the Mariner East Pipeline Project. Such government agencies include, but are not limited to, the Pennsylvania Department of Environmental Protection and the U. S. Environmental Protection Agency.

David R. Chalson
Vice President
Sunoco Logistics Partners Operations GP LLC

(air)

Delegated Individual: **Matthew L. Gordon, Principal Engineer**
Project: **Sunoco Pipeline L.P. – Mariner East Pipeline**

I, David R. Chalson, Vice President of Sunoco Logistics Partners Operations GP LLC, the General Partner of Sunoco Pipeline L.P. hereby delegate to the above listed individual, authority to sign water quality permit applications and reports including Discharge Monitoring Reports that are submitted to government agencies regarding operations for the Mariner East Pipeline Project. Such government agencies include, but are not limited to, the Pennsylvania Department of Environmental Protection and the U. S. Environmental Protection Agency.

David R. Chalson
Vice President
Sunoco Logistics Partners Operations GP LLC

(water)

ATTACHMENT 8: Off Site Discharge Analysis

Attachment 8 - Off Site Discharge Analysis

Pennsylvania Pipeline Project -

South Central Region: Spreads 3, 4, 5

Major Modification-Horse Valley

February 2019

Prepared for:

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1 Table 1 – Off-Site Discharge to Non Surface Water Locations

LIST OF ACRONYMS

ACRONYM	MEANING
BMP	Best Management Practice
E&SC	Erosion and Sediment Control
LOD	Limit of Disturbance
PCSM	Post-Construction Stormwater Management
ROW	Right of way

PENNSYLVANIA PIPELINE PROJECT – OFF-SITE DISCHARGES OF STOMRWATER TO AREAS THAT ARE NOT SURFACE WATERS

The Pennsylvania Pipeline Project involves the installation of two parallel pipelines within a 306-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, PA to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255 miles. Spread 6 (South East Region) of this project are cross through Blair, Huntington, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster and Berks Counties, PA.

The Horse Valley Major Modification consist of a change in route and installation method of the 16-inch diameter pipeline previously permitted as the Horse Valley Horizontal Directional Drill (HDD) to an open cut installation. The change in methodology is a result of the encounter of an unconfined aquifer during the 20-inch pipe HDD under an Exceptional Value (EV) wetland/stream complex. SPLP has elected to abandon any future HDD attempts to install the 16-inch pipeline through this area and has sought an alternate route of installation agreeable to the landowners and that minimizes impacts to the aquifer. The reroute includes an additional 3.94 acres of LOD. This E&S plan specifically relates to impacts associated with the proposed Horse Valley Major Modification.

Throughout the length of the pipeline there are areas which propose to discharge stormwater to off-site areas other than a surface water. All of these discharges will be non-erosive to adjacent property owners and is detailed in the E&SC and PCSM plans per DEP Document No. 3140-FS-DEP4124.

PUMP STATIONS

There are no pump stations associated with the Horse Valley Major Modification.

There are no off-site discharges to areas other than surface water for any of the block valves.

BLOCK VALVES

There are no block valves associated with the Horse Valley Major Modification.

MAINLINE

The Horse Valley Major Modification has off site discharge from waterbars along the reroute and is listed in Table 1. None of the waterbars discharge directly into an adjacent property.

There are several locations along the length of the pipeline which have off-site discharges to areas other than surface waters and a list of these locations can be found in table 1. All of these discharges are from waterbars

installed throughout the length of the pipeline installation. These water bars are designed in accordance with the PADEP's Erosion and Sediment Pollution Control Program Manual (363-2134-008) and the Pennsylvania Stormwater Best Management Practices manual (363-0300-002) and is a non-erosive discharge. Details of these measures can be found in the E&SC plan.

Table 1:
Off-Site Discharge to Non Surface Water Locations
South Central Region
Major Modification-Horse Valley

E&S SHEET NUMBER	Watershed	E&S PLAN STATIONING
PERRY		
ES - 3.03	Horse Valley Run	00+00 through 22+67

3. E&S REPORT AND ATTACHMENTS

Erosion and Sediment Control Plan

Pennsylvania Pipeline Project – South Central Region: Spreads 3, 4, 5

Major Modification-Horse Valley

February 2019

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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
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ENGINEER
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2/22/19

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3 HDD Plans, Profiles and Auger Bore Drawings

4 Design Calculations and Construction Details

5 Limiting Soil Characteristics Table, Soil Descriptions, Soil and Geological Maps, Karst Plan

6 OSHA Trenching and Shoring Tables and Construction Sequence

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LIST OF ACRONYMS

ACRONYM	MEANING
% CCE	Calcium carbonate equivalent
% ENV	Effective neutralizing value
ABACT	Antidegradation Best Available Combination of Technologies
BMPs	Best management practices
CWF	Cold water fisheries
DRBC	Delaware River Basin Commission
DELCORA	Delaware County Regional Water Quality Control Authority
E&S	Erosion and sediment

E&SC	Erosion and sediment control
EV	Exceptional value
FEMA	Federal Emergency Management Agency
HDD	Horizontal directional drill
HQ	High quality
LOD	Limit of disturbance
NGL	Natural gas liquid
OSHA	Occupational Safety and Health Administration
PA	Pennsylvania
PADEP	Pennsylvania Department of Environmental Protection
PASDA	Pennsylvania Spatial Data Access
PCSM	Post Construction Stormwater Management
PWS	Public water source
PIs	Pure live seed
ROW	Right of way
SPLP	Sunoco Pipeline, L.P.
SPPP	Sunoco Pennsylvania Pipeline Project
SWS	Surface water source
SRBC	Susquehanna River Basin Commission
Tt	Tetra Tech, Inc.
TSF	Trout stock fishery
UNT	Unnamed tributary
USGS	United States Geological Survey

1.0 INTRODUCTION

Tetra Tech, Inc. (Tt) has prepared this Erosion & Sediment Control (E&SC) Plan for Sunoco Pipeline, L.P. (SPLP) – Pennsylvania Pipeline Project, South Central Region: Spreads 3, 4, and 5. The plan addresses activities associated with a major modification to the Sunoco Pennsylvania Pipeline Project (SPPP) installation. Spreads 3, 4, and 5 (South Central Region) of this project are located in Blair, Huntingdon, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, and Berks Counties, Pennsylvania (PA). The proposed modification is located in Perry County, PA. Site location maps are provided in Attachment 1. This E&SC Plan, if properly implemented, will provide for effective E&SCs throughout construction.

1.1 PROJECT DESCRIPTION

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project that would expand existing pipeline systems to provide natural gas liquid (NGL). The project involves the installation of approximately two parallel pipelines within a 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania (PA) to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255.8 miles. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system. The 20-inch pipeline will be installed first, followed by the 16-inch line. Any temporary stabilization required will be implemented in accordance with this Erosion and Sediment (E&S) Plan. Both pipelines will be installed within the same limit of disturbance (LOD) and in the same construction period. This E&S Plan specifically relates to impacts associated with the South Central Region, Construction Spreads 3, 4, and 5.

Fifty feet will be maintained as permanent ROW. In addition, temporary use areas or extra workspaces will be required at some stream and road/railroad crossings; these will typically expand the construction ROW by 25 feet where needed. Construction activities will involve tree removal, clearing and grubbing within the ROW, trenching, pipe installation, and site restoration. The total LOD in the South Central Region will be approximately 1,754 acres. Acres disturbed by county will be as follows: Blair County with 254 acres disturbed, Huntingdon County with 278 acres disturbed, Juniata County with 35 acres disturbed, Perry County with 127 acres disturbed, Cumberland County with 314 acres disturbed, York County with 69 acres disturbed, Dauphin County with 131 acres disturbed, Lebanon County with 223 acres disturbed, Lancaster County with 75 acres disturbed, and Berks County with 248 acres disturbed.

The Horse Valley Major Modification consist of a change in route and installation method of the 16-inch diameter pipeline previously permitted as the Horse Valley Horizontal Directional Drill (HDD) to an open cut

installation. The change in methodology is a result of the encounter of an unconfined aquifer during the 20-inch pipe HDD under an Exceptional Value (EV) wetland/stream complex. SPLP has elected to abandon any future HDD attempts to install the 16-inch pipeline through this area and has sought an alternate route of installation agreeable to the landowners and that minimizes impacts to the aquifer. The reroute includes an additional 3.94 acres of LOD. This E&S plan specifically relates to impacts associated with the proposed Horse Valley Major Modification.

For a conventional lay, the pipelines would be installed within the same disturbance to the maximum extent practicable. For safety purposes, the installation would be staggered by what is estimated to be no more than 60 days. At some HDDs with longer drills, however, the time period between installation of the two pipelines may exceed 60 days. Any temporary stabilization required would be implemented in accordance with project's E&S Plans. Any permanent or temporary impacts associated with the second pipeline installation will be similar to the first installation.

There are locations where the Project lines (16" and 20") share the ROW with another Sunoco 8" line, and in some cases, the Project line will cross the Sunoco 8" line. The new lines are still expected to be installed underneath the existing line. If for some reason, the Project lines must cross over top of the Sunoco 8" line while still maintaining the minimum necessary cover, Sunoco will be able to stop flow through any line, as necessary, to facilitate safe access to their crossed line.

Past and present land use of the project area and surrounding area is agricultural and forested land. Future land use will be a maintained vegetated natural gas pipeline ROW and agricultural land and forested land. Relevant topographic features including streams, streets, pipelines, structures, utility lines, fences, paving and other significant items along the gas line alignment are indicated on the plans, where applicable.

1.2 APPROACH AND OVERVIEW

This E&SC Plan was developed using Pennsylvania Department of Environmental Protection (PADEP) guidance documents and sound engineering judgment. When implemented properly, the E&SC practices identified herein will minimize uncontrolled surface water runoff from disturbed areas and minimize the migration of construction-generated sediment. The following general principals apply:

- Planning. Site topography, soil types, and potential effects of construction-related activities on E&S migration have been considered in developing this E&SC Plan. Areas of steep, erodible slopes and erodible soils, if encountered during construction activities, will not be disturbed without instituting proper engineering controls to minimize these concerns.

- Minimize Land Disturbance. To the extent possible and practical, disturbed areas and the duration of exposure to erosion elements will be minimized. Clearing of vegetation will be limited to only those

areas of the site to be disturbed. To the extent possible and practical, existing vegetation will be retained and protected.

- Installation of Erosion and Sediment Controls. E&SC best management practices (BMPs) will be constructed, stabilized, and functional before earth disturbance activities begin within the tributary areas of those BMPs.

- Maintenance of Erosion and Sediment Controls. Until the site is stabilized, E&SCs will be properly maintained. Maintenance will entail inspections of E&SC features on a weekly basis and after runoff events. Preventative and corrective maintenance work, including clean out, repair, replacement, regrading, reseeding, and remulching will be performed as soon as practical. If E&SCs fail to perform as expected, replacements or modifications of those installed will be required.

- Stabilization of Disturbed Areas. If a cessation of earth disturbance activities lasts 4 days or longer, the site will be immediately seeded, mulched, or otherwise protected from accelerated E&S. BMPs will remain in place and be maintained until permanent stabilization is achieved. Disturbed areas will be stabilized as soon as is practical, including areas disturbed during the removal of BMPs. Temporary and permanent vegetation, mulch, gravel cover, repaving or a combination of these measures, will be employed immediately following the completion of backfilling and final grading activities. Any areas adversely impacted while acquiring access to the dig sites will be repaired to previous conditions.

- Floodplain. (See 25 Pa. Code § 105.1) – The lands adjoining a river or stream that have been or may be expected to be inundated by flood waters in a 100-year frequency flood. Unless otherwise specified, the boundary of the floodplain is as indicated on maps and flood insurance studies provided by Federal Emergency Management Agency (FEMA). In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodplain, it is assumed absent evidence to the contrary, that the floodplain extends from (1) any perennial stream to 100 feet horizontally from the top of the bank, and (2) from any intermittent stream to 50 feet horizontally from the top of the bank of such intermittent stream.

- Floodway – The channel of the watercourse and portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top of the bank of the stream (See 25 Pa. Code § 105.1). The FEMA boundary is shown on the E&S Sheets (Attachment 2), when this information is available. When this information is not available, the floodway is shown as defined above for perennial and intermittent streams only.

2.0 SITE DESCRIPTION

The South Central Region of SPPP will involve the installation of a 20-inch and a 16-inch diameter NGL pipeline approximately 161.8 miles long, primarily across agricultural and forested areas from the western border of Blair County to the eastern border of Berks County. The Horse Valley Major Modification consists of a change in route and installation method of the 16-inch diameter pipeline previously permitted as the Horse Valley Horizontal Directional Drill (HDD) to an open cut installation.

Past and present land use of the project area and surrounding area is agricultural and forested land. Future land use will be a vegetated, maintained pipeline ROW and agricultural land and forested land.

Relevant topographic features including streams, streets, pipelines, structures, utility lines, fences, paving and other significant items along the gas line alignment are indicated on the E&S plans, where applicable (Attachment 2). The E&S Plan Sheets also provide information regarding the typical controls and construction sequence to be followed. The construction details provided in Attachment 4 are the standard E&SCs to be used.

2.1 TOPOGRAPHY

The work zone is located on ground of varying elevations. Site elevations vary from 285 feet (Susquehanna River) to 2,500 feet (western border of Blair County) above mean sea level based on the Pennsylvania Spatial Data Access (PASDA). The construction plans show the topography of the site and the surrounding area.

2.2 GEOLOGY AND SOILS

The soils and geologic formations surrounding the project are shown on the figures provided in Attachment 5. Attachment 5 also provides the soil descriptions and properties of the soils found at the site. Attachment 5 also provides the Void Mitigation Plan for Karst Terrain and Underground Mining. Attachment 13 is a geohazard evaluation of the Horse Valley Major Modification reroute which details and provides mitigation recommendations for documented and suspected landslides, steep slopes, karst features, and soils that are prone to slope failure. In general, the following actions will be taken to counteract soil limitations:

- E&S BMPs will be in place and functional prior to earth disturbance to counteract erodible soils. Prompt stabilization practices will be implemented.
- Cut slopes will be stabilized as soon as possible with seed and mulch or erosion control blanket to prevent sliding. Cut slopes are not designed to exceed 3:1.
- The pipeline being installed will be coated steel.

- If a high groundwater table is encountered, water will be drained away from disturbed areas to a well vegetated area or a placed compost filter sock prior to being discharged off the site. If dewatering is required during construction activities or diversion of a stream is required, the water will be pumped through a pumped water filter bag in accordance with the details provided. Saturated soils are to be dried prior to being used on site.
- Soils will be evaluated throughout the construction process to determine whether additional measures will need to be taken to make the soil suitable for its intended use on site.
- Where necessary, trench plugs will be used to prevent piping.
- Soil amendments will be added to site soils to promote vegetative growth.
- A wetland delineation and stream investigation has been conducted to determine the presence and location of hydric soils.
- If a sinkhole is encountered, repair should be done under the direct observation and supervision of a professional geologist or licensed geotechnical engineer. Site specific sinkhole repairs should be developed on a case by case basis.

In accordance with PADEP's guidance for avoiding and handling acid-producing rock formations encountered during site development, this plan has been prepared to address acid-producing rock formations which may be present at the Pennsylvania pipeline project. USGS topographic mapping shows that the pipeline traverses through areas that were previously strip mined.

PADEP recommends two strategies for handling acid-producing rock formations – avoidance and handling. Acid-producing rock formations will be avoided to the maximum extent practicable at the site. If coal or other acid-producing rock is encountered at the project site, the acid producing rock will either be removed from the site or handled onsite. If coal or other acid-producing rock must be handled on site is should be sampled and analyzed for total percent sulfur. The percent sulfur can be used to predict if the material is acid-producing and can also provide the ability to develop remedial strategies, such as using neutralizing agents and encapsulating with a layer of low permeability clay. Determination of percent sulfur shall be conducted in accordance with PADEP's guidance.

Soil Maps were generated and the soil types are shown on the Limiting Soil Characteristics Table of Attachment 5. **Detailed descriptions of the soil types are presented in Attachment 5.**

To prevent sediment from leaving the site, E&SCs will be in place and functional prior to earth disturbances, and stabilization practices will be implemented in disturbed areas as soon as practical. Geologic formations or soil conditions that may have the potential to cause pollution after earth disturbance were not observed during field activities.

2.3 SURFACE WATER HYDROLOGY

The SPPP area surface water runoff drains to surface waters and unnamed tributaries (UNT's) designated as high quality (HQ), warm water fisheries (WWF), exceptional value (EV), cold water fisheries (CWF), and trout stock fisheries (TSF) under Pa. Code 25 Chapter 93. The receiving waters for the Horse Valley Major Modification LOD are Horse Valley Run, which is designated as HQ-CWF in Pa. Code 25 Chapter 93. This E&S plan contains Antidegradation Best Available Combination of Technologies (ABACT) BMPs to maintain the designated use of the receiving waters. The locations of the receiving waters relative to the project area can be seen on the USGS location map in Attachment 1 and the plan drawings in Attachment 2.

The proposed pipeline route has been designed to maximize the use of existing utility corridors, and minimize the number and linear footage of crossings of all surface waters, including those classified as High Quality (HQ) or Exceptional Value (EV). The Trenchless Construction Feasibility Study sets forth an analysis of the possible implementation of trenchless construction methods at each stream or wetland crossing, and indicates the use of trenchless crossing installation methods where feasible. For those surface water crossings crossed by the open cut installation method, the E&S Plan identifies and incorporates ABACT E&S best management practices (BMPs).

Descriptions of the Primary Receiving Waters are presented in Table 1.

3.0 EROSION AND SEDIMENT CONTROL PRACTICES

Two general types of E&SCs will be used on site during construction: stabilization controls and structural controls. Stabilization controls are implemented as needed to preserve existing vegetation or disturbed areas. Structural controls are used to divert or convey runoff, prevent sediment migration, and reduce the erosive runoff forces. For the purposes of this plan, structural controls are mainly temporary; however, some of the controls may be permanent. The following sections describe the construction sequence and the E&SCs.

3.1 CONSTRUCTION SEQUENCE

Refer to the E&SC plan drawings for the location of the proposed work and the associated BMPs. A generalized construction sequence is provided below. The construction sequence is intended to provide a general course of action in order to conform to the applicable regulatory agency requirements for temporary and permanent soil erosion and sedimentation controls. Necessary parts for proper and complete execution of work pertaining to this plan, whether specifically mentioned or not, are to be performed by the contractor. It is not intended that the drawings and this report show detailed information on methods and materials. The contractor will comply with all requirements listed in this section. The contractor may be required to alter controls based on effectiveness of controls or differing conditions encountered in the field. A preconstruction meeting is required prior to the start of any construction activity. The PADEP, contractors, the landowner, appropriate municipal officials, and the E&S plan preparer must be invited to this meeting at least seven days in advance.

This E&SC Plan does not outline specific steps for the protocols for the construction of pipelines in regards to Health and Safety. A Site-Specific Health and Safety Plan should be developed and followed during the construction of the pipeline; however, general guidelines are attached as follows:

- **Attachment 6 includes OSHA Trenching and Shoring Tables and Construction Sequence.**
- **Attachment 7 includes OSHA Construction Standard 1926 Subpart P – Excavations**.

1. Make all appropriate modifications as indicated in general notes on plan sheet ES-0.01.
2. Flag or fence project limits of disturbance and approved access. Sign and flag wetland boundaries and streams.
3. Orange construction fence will be provided and installed at wetland areas adjacent to the LOD and not planned to be impacted to identify and deter construction equipment, vehicles and personnel from entering wetland.
4. Locate staging areas and access points including construction entrances. Install compost filter socks down slope of these areas.

5. Install rock construction entrances as needed. Refer to the rock construction entrance detail on plan sheet ES-0.05 or ES-0.06 (county dependent).

6. Construct the proposed access roads and implement temporary improvements as identified in access road summary table and detailed on the plan sheets.

7. Install compost filter socks as shown on the construction drawings. Installations sizing, and spacing must conform to the chart and details provided on plan sheet ES-0.05 or ES-0.06 (county dependent). Install temporary upslope diversions and temporary slope pipes as shown on plan sheets and details.

8. Clearing, grubbing, and topsoil stripping shall commence along the pipeline route and be limited to those areas described in each stage of the construction sequence. General site clearing, grubbing and topsoil stripping may not commence in any stage or phase of the project until the E&S BMPs specified by the bmp sequence for that stage or phase have been installed and are functioning as described in this E&S plan. For clearing, grubbing, and topsoil removal in all stream, river, wetland or other water body crossings, refer to construction sequence notes below. Topsoil will be segregated at locations throughout the project where topsoil exists.

9. Temporary waterbars or approved interceptor dykes will be installed along the alignment prior to pipe installation at the end of each work day. During the periods of time where pipe trench is open contractors will provide positive control of all storm water on site, temporary waterbars will be constructed by the end the work day, or during each work day if required contractor will install compost filter sock to control erosion until 70% vegetation growth has been achieved.

10. Minimize total area of disturbance. Maintain temporary soil stockpiles within existing soil erosion and sediment controls. Should excavation enter streams, follow specific details for these areas shown on the drawings and include the steps detailed in the specific sections below. Pullback areas for HDDs will be cleared and prepared as needed to support staging, welding and testing of the HDD pipe sections. Areas not utilized for construction activities should be avoided to minimize impacts.

11. Install pipe and trench plugs in accordance with details on plan sheet ES-0.07 or ES-0.08 (county dependent). When open cutting driveways and access roads, contractor shall have road plates available to maintain access for landowners. The 20-inch pipeline will be installed first, followed by the 16-inch line. Any temporary stabilization required between the two installations will be implemented in accordance with this E&S Plan. Both pipelines will be installed within the same limit of disturbance and in the same construction period.

12. For open-cut areas, the length of time required to clear and grade the area, excavate the trench, install the pipelines, backfill the trench and begin stabilization of disturbed areas will not exceed 30 calendar days for most installations. Longer time periods may be approved on a case-by-case basis.

13. Backfill excavated area and cover with topsoil (where topsoil was segregated).

14. Before restoration of grade, the second 16-inch pipeline will be installed. All temporary BMPs will be implemented between the two installations in accordance with the notes and details for temporary seeding and cover.

15. Restore grade to original surface elevations as soon as practicable following completion of installation of pipes. Install permanent waterbars in accordance with plan sheet ES-0.08. Immediately seed and mulch disturbed areas or prepare for paving in roadway areas.

16. Install erosion control blanket on all slopes 3:1 or greater and all areas, regardless of slope and within 100 feet of special protection waters or 50 feet of non-special protection surface waters. Locations are shown on plan sheets.

17. In areas that used stone or timber mats for temporary stabilization and/or access, the stone or mats will be removed and, if needed, the soil will be scarified or ripped to a depth of 8-12 inches to de-compact the soil. After reestablishing preconstruction contours, topsoil will be replaced to a minimum depth of 4-8 inches and seeded and mulched. Vehicular traffic after site restoration should be restricted from areas to prevent soil compaction.

18. Maintain erosion and sedimentation control devices until site work is complete and a uniform 70% perennial vegetative cover is established. Remove soil and erosion sediment control measures upon establishment of a uniform 70% perennial vegetative coverage over the disturbed area. Re-grade and revegetate areas disturbed during the removal of the soil erosion and sediment controls.

19. As part of the ongoing storm water bmp inspection and maintenance program any structural bmp recorded on this project will be inspected maintained, and repaired in accordance with the plan filed with the deed.

20. In accordance with 25 pa code 102.7, upon completion of all steps in the construction sequence, a notice of termination form will be submitted to terminate the authorization of coverage indicating all activities under this permit have been completed.

21. For all EV wetland and stream crossings, SPLP will install the second pipeline immediately following the installation of the first pipeline, as long as no unanticipated, extraneous circumstances or safety issues are encountered. The two pipes will be installed in a single disturbance that will not require interim temporary stabilization/restoration.

For stream, river, wetlands or other water body utility crossings that will be open cut:

1. No work shall commence through a stream, river, wetlands or other water body during inclement weather.

2. A utility line crossing of a stream channel 10 feet in bottom width or less shall be completed within 24 hours from start to finish including trench backfill, stabilization of stream banks and stabilization of the area 50 feet back from the top of each stream bank.

3. A utility line crossing of a stream channel between 10 feet and 100 feet in bottom width shall be completed within 48 hours from start to finish including trench backfill, stabilization of stream banks and stabilization of the area 50 feet back from the top of each stream bank.

4. Wetland crossings are to be completed along with the mainline installation and will be dependent upon the length of the crossing.

5. Facilities for removing sediment from pumped water should be available at the stream crossing site before trenching commences and maintained until trench backfilling is completed. Assembly areas, temporary equipment and non-hazardous material storage areas shall be located at least 50 feet back from the top of any bank.

6. Install temporary equipment crossings at streams and temporary timber mats at wetland crossings in accordance with notes and details.

7. For dry stream crossings install pump bypass, dry flume, or cofferdam in accordance with notes and details.

8. Dewatering work area. Water from the excavation shall be pumped to a sediment filter bag. Where possible, excavation shall be from the top of the stream bank, where technically feasible.

9. Stabilize channel excavation and stream banks prior to redirecting stream flow.

For conventional and HDD bore crossings:

<u>Conventional bores</u>

1. Conventional bores will be conducted along with main line installation to limit the time of disturbance in those areas.

2. Install compost filter socks downgradient of the bore and receiving pits.

3. Excavate pits as shown in the typical stream crossing detail on plan sheet ES-0.17

4. Bore beneath streams where indicated on the construction drawings.

5. Water from the bore pits and work areas shall be pumped to a pumped water filter bag in accordance with detail on plan sheet ES-0.07 or ES-0.08 (county dependent).

6. Upon completion, backfill all pits.

HDD bores

1. Install compost filter socks at staging and pullback areas in accordance with E&S plan sheets. Where applicable temporary grading of staging areas is provided on plan sheets.

2. Bore and pullback areas shall be located a minimum of 50 feet back from each top of stream bank unless authorized by PADEP.

3. The HDD bore alignment shall be monitored for inadvertent returns. An inadvertent return plan has been developed for this project. This plan is to be reviewed, onsite, and implemented for each drill conducted.

4. Upon completion of HDD bore, restore bore and pullback areas to pre-construction conditions in accordance with E&S plans and details.

See Attachment 3 for the HDD Plans and Profiles.

For working within a wetland area:

1. Locate staging areas and access points. Staging areas should be located at least 50 feet from the edge of the wetland. Install sediment barriers down slope of these areas.

2. Install rock construction entrance as needed. Refer to the rock construction entrance detail on drawings for suggested dimensions.

3. Install orange flagging around perimeter of wetland and sediment barriers along the perimeters of the site as shown on the construction drawings.

4. Mats, pads, or similar devices shall be used during the crossings of wetlands. Original grades through wetlands must be restored after trenching and backfilling. Any excess fill materials must be removed from the wetland and not spread on-site.

5. Soil excavated from wetland areas shall be carefully removed with the roots intact. This soil should be placed in a separate stockpile to be reused during the wetland surface restitution.

6. Dewater work area; water from the excavation shall be pumped to a sediment trap or a filter bag.

7. Install pipe.

8. Install trench plugs in wetland areas to prevent the trench from draining the wetland or changing its hydrology.

9. Backfill pipe trench. Backfill the top 12-inches of the excavated trench with the stockpiled wetland soil to match original surface grades.

10. No soil amendments such as agricultural lime, fertilizer, etc. Will be used within wetland areas.

11. Compact backfill and grade the surface of the trench area to allow for positive drainage to soil erosion and sediment controls and to prepare disturbed areas for permanent trench restoration.

12. Maintain all erosion and sedimentation control devices until site work is complete and a uniform 70% perennial vegetative cover is established.

13. Remove all soil and erosion sediment control measures upon establishment of a uniform 70% vegetative cover over the disturbed area. Re-grade and revegetate areas disturbed during the removal of the soil erosion and sediment controls.

For temporary stream and wetland crossings:

1. Install temporary equipment crossings and temporary timber mat wetland crossings in accordance with plan sheet ES-0.10.

2. Temporary stream crossings shall be inspected on a daily basis. Damaged crossings shall be repaired within 24 hours of the inspection and before any subsequent use. Sediment deposits on the crossing or its approaches shall be removed within 24 hours of the inspection.

3. As soon as the temporary crossing is no longer needed, remove temporary crossing. All materials shall be disposed of properly and disturbed areas stabilized. Remove all soil and erosion sediment control measures upon establishment of a uniform 70% vegetation cover over the disturbed area.

3.2 BEST MANAGEMENT PRACTICES

An effective method to minimize E&S migration is to promote and implement BMPs. BMPs are relatively simple, inexpensive, and cost-effective protocols to prevent E&S migration. The basic BMPs that are anticipated to be employed during the construction activities include:

- Minimizing disturbances to site areas, especially those currently covered with pavement or vegetation.
- Minimize the time that soil is exposed.
- Prevent the runoff from flowing across disturbed areas (divert the flow to vegetated areas).

- Stabilize disturbed soils as soon as possible.
- Slow down the runoff flowing across the site.
- Remove sediment from surface water runoff before it leaves the site.

3.3 SEQUENCE OF BMP INSTALLATION

General stabilization and structural controls will be used in E&SC practices to (1) divert stormwater flows away from exposed areas, (2) convey runoff, (3) prevent sediments from moving off-site, and (4) reduce the erosive forces of runoff waters. Compost filter socks and other structural controls that will be utilized during construction activities will include the following:

Vegetative Stabilization Controls

Grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, or if specified, sodded, unless occupied by structures or paved. A temporary cessation of earth disturbance activities that lasts for four days or longer requires temporary stabilization. Disturbed areas, which are at final grade, will be seeded and mulched immediately.

If seeding cannot be completed immediately after the area reaches final grade due to weather conditions, the disturbed area will be stabilized and mulched with straw at the rate of 3 tons per acre. This straw will be anchored using a method described under Mulching of this narrative.

Structural Controls

Temporary control facilities to be used during construction include the use of compost filter socks and rock construction entrances. Other structural controls as described below may also be used as deemed necessary based on conditions encountered in the field. Installation guidelines and locations for the below devices are as shown on standard drawings and plans. The temporary control measures that will be used on this project include, but are not limited to:

- Compost Filter Socks - This temporary sedimentation control measure consists of wood or metal posts driven through a compost filled mesh tube. Filter socks will be located as needed on side-slope and down-slope boundaries of disturbed areas. Both ends of each compost filter sock should be extended at least 8 feet upslope. Compost filter socks will be sized using the PADEP Construction Detail provided in Attachment 4. Compost filter socks will be used in drainage areas with HQ and EV waters.
- Rock Filter Outlet – Rock filter outlets will be used, as necessary, to address problems of concentrated flows to sediment barriers. In the event of unanticipated concentrated flow and sediment barrier failure, install a rock filter outlet unless the concentrated flow can be diverted away from the barrier. Rock filter outlets used in drainage areas with HQ and EV waters need a 6” layer of compost installed on the upslope side of the rock.

- Rock Filter – Rock filters are proposed to trap sediment in a newly constructed channel, diversion of channels, and at the inlet of pipe diversions.

- Compost Sock Sediment Trap - This temporary sedimentation control measure is useful in controlling runoff from access roads and may also be used at other locations where a temporary sediment trap is appropriate. The minimum base width will be equivalent to the height of the trap and sediment accumulation will not exceed 1/3 the total height of the trap. Ends of the trap will be a minimum of 1 foot higher in elevation that the mid-section, which will be located at the point of discharge. Compost sock sediment trap will be sized using the PADEP Construction Detail provided in Attachment 4. Compost sock sediment traps can be used in drainage areas with HQ and EV waters.

- Tarpaulin Covers - Tarpaulin covers will be used, as necessary, to protect topsoil storage stockpiles from wind and precipitation erosion. Stockpile slopes will be 2:1 or less. A minimal amount of soil will be stockpiled so that the height of the stockpile is less than 35 feet. Compost filter sock is also proposed to protect sediment runoff from stockpile areas.

- Rock Construction Entrance – Temporary access routes will be established on and proximate to the site to facilitate construction activities. The use of access routes will help confine truck and equipment traffic to specific corridors thus minimizing land disturbance and protecting vegetation. Site traffic during wet weather will be limited. No vehicles will be permitted in streams or rivers.

- Wash Racks – Wash racks will be used at rock construction entrances and will be designed to accommodate anticipated vehicular traffic. A water supply will be made available at wash racks to wash the wheels of vehicles exiting the site. Reasonable methods which are sanctioned by the PADEP as alternatives to installation of tire wash stations on public road access points for gathering pipeline projects in EV/HQ or siltation impaired watersheds include:

    1. For paved surface public roads: use of a vacuum truck sweeper or sweeper with a catch bin attachment.

    2. For dirt or gravel surface public roads: rigorous manual removal of mud/dirt from vehicle/equipment tires prior to exiting construction site, supplemented by immediate recover, by manual or mechanical means, of soil which may become discharged onto public roadways. Dust control and/or compaction via rolling of the dirt public road surface will be implemented as needed.

    A predicate for utilizing alternative 1 and 2 above is that the rock pad construction entrance must be extended to a minimum total length of 100 feet and will be constantly maintained including structure thickness to insure its effectiveness remains intact at all times.

Frequency of mechanical and/or manual controls will be dependent upon construction traffic intensity, weather, and soil moisture conditions. At a minimum for paved roads – any day in which construction traffic is exiting the rock construction entrance, the vacuum truck sweeper or sweeper with a catch bin attachment will clean the roadway at the end of the work day and prior to any forecasted rain event. The requirement is to not introduce sediment load from construction traffic onto public road surfaces and into road ditches which will flow into the EV/HQ or siltation impaired water resources which are the subject of the increased protection measures.

- Pumped Water Filter Bag – Pumped water filter bags may be used to filter water pumped from disturbed areas prior to discharging to surface waters. Compost filter socks will be installed within 50 feet of any receiving surface water or where grassy area is not available. Filter bags will be installed according to the details shown in the PADEP Construction Detail provided in Attachment 4.

- Erosion Control Blanket - A manufactured erosion control blanket will be installed on all slopes 3:1 or steeper and within 50 feet of surface water or 100 feet of special protected water. The blanket will be biodegradable but capable of providing protection for two growing seasons. Straw or similar fiber material will be placed between two biodegradable nets. The top net will be heavyweight and UV stabilized; the bottom net will be a lightweight netting. Erosion control blankets will be anchored and stapled in place in accordance with the manufacturer's recommendations and the detail on the construction drawings. For slopes between 3:1 and 1:1 use erosion control blanket SC 150 as manufactured by North American Green or Owner approved equal material or equal method. In areas where livestock is kept use erosion control blanket BioNet SC150BN as manufactured by North American Green or Owner approved equal material or equal method

- Waterbars – Waterbars will be installed across the ROW on all slopes greater than 5 percent. Waterbars will be constructed at a slope of 2 percent and discharge to a well-vegetated area. Waterbars will not discharge into an open trench. Waterbars will be oriented so that the discharge does not flow back onto the ROW. Obstructions (e.g. compost filter socks etc.) will not be placed in any waterbars. Where needed, they will be located below the discharge end of the waterbar. Waterbars will be installed in accordance with the detail provided in Attachment 4.

- Trench Plugs – Impervious trench plugs are required for all stream, river, wetland, or other water body crossings. Trench plugs are also used on slope run spacing. See drawings.

- Upslope Diversion Berms – Diversion berms are proposed to divert clean water runoff around the disturbed area for the project.

- Slope Pipes – Slope pipes are proposed to convey the water from the upslope diversion berms through the disturbed area. The slope pipes will outlet to a triple stack of compost filter sock to act as a level spreader to minimize outlet velocities so that they are non-erosive and dissipate flows.

- Water Deflectors – Water deflectors are proposed to direct runoff off of rock construction entrances and temporary access roads to discharge to stabilized vegetated areas. Compost filter socks can also be used at the outlet ends to trap sediment and minimize velocities.

- Public Rights of Way - In an effort to reduce the tracking of sediment onto public ROW, stabilized construction entrances of crushed stone located at points where traffic will be entering or leaving the site will be installed. Mud and soil accumulating on roadways, as a result of construction activities, will be removed with hand tools, such as shovels, and disposed of properly. The contractor will check the road a minimum of twice daily to verify cleanliness at road crossings and take necessary corrective action. Gravel will be used to limit dust and erodability.

- Restoration - All improved areas disturbed by construction will be restored.

- Additional Requirements – Any additional requirements to adequately control E&S pollution will be the responsibility of the contractor and will be considered incidental to construction activities.

3.4 PRIMARY CONSTRUCTION ACTIVITIES

Clearing and Grubbing

When required, brush, scrub growth, saplings and trees so directed to be cut and removed will be completely removed from the site of the work. The contractor will remove stumps and large roots and refill the depressions with suitable compacted earth fill where necessary to bring the grade back to its original elevation or final design grade. The contractor will protect exposed bare earth by mulch, or other appropriate measures if clearing and grubbing operations are completed more than two days prior to pipeline installation.

Vegetation clearing, grubbing, or removal within the permanent ROW is not anticipated to occur as part of the operations and maintenance of the pipelines to be installed via an HDD or bore except in the areas within the LOD, which is depicted in the plan drawings. However, in instances where the LOD extends into wetlands, floodplains, and floodways, no maintenance clearing, cutting, removal, or other alteration will occur. Instead, alternative methods of inspections (e.g., foot patrol) will be employed to maintain the pipeline ROW in wetlands, floodplains, and floodways.

Grading and Topsoil Stockpiling

Before beginning excavation and/or filling work, the topsoil from all areas to be affected will be stripped and stockpiled in a separate stockpile from the other excavated soil material. After completion of the major construction work, the topsoil will then be replaced as the upper layer of backfill. In general, all topsoil stockpiles will be located within the LOD away from nearby streams and/or drainage ditches or watercourses. Temporary erosion protection devices such as compost filter socks will be used to protect all stockpiled topsoil from being carried into nearby water courses by the action of any overland runoff water.

As topsoil stockpiles become completely depleted, the disturbed areas will be graded and revegetated. The compost filter socks will be removed only after a uniform 70-percent perennial vegetative coverage has been established across the disturbed area.

Topsoil will not be placed when the subgrade is frozen or when it is excessively wet or dry, and will not be handled when in a frozen or muddy condition.

Vegetation

Grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, unless occupied by structures or paved. *The disturbed areas will be restored to meadow conditions or to the pre-existing condition (residential lawn or previously existing paved, gravel, or dirt roads).* Any temporary cessation of earth disturbance activities which lasts for four days or longer requires temporary stabilization. Disturbed areas, which are at final grade, will be seeded and mulched immediately.

If seeding cannot be completed immediately after the area reaches final grade due to weather conditions, the disturbed area will be stabilized and mulched with straw at the rate of 3 tons per acre. This straw will be anchored using a method described under Mulching of this narrative.

Seeded areas will be inspected weekly and after each runoff event. Necessary repairs will be made by the end of the week.

Permanent Seeding

SITE CONDITIONS	NURSE CROP	SEED MIXTURE (SELECT ONE MIXTURE)
SLOPES AND BANKS (NOT MOWED)		
WELL-DRAINED	1 PLUS	3, 5, 8, OR 12 (1)
VARIABLE DRAINAGE	1 PLUS	3 OR 7
SLOPES AND BANKS (MOWED)	1 PLUS	2 OR 10
WELL-DRAINED		
SLOPES AND BANKS (GRAZED/HAY)	1 PLUS	2,3, OR 13
WELL-DRAINED		
GULLIES AND ERODED AREAS	1 PLUS	3, 5, 7, OR 12 (1)
EROSION CONTROL FACILITIES (BMPS)		
SOD WATERWAYS, SPILLWAYS, FREQUENT WATER FLOW AREAS	1 PLUS	2, 3, OR 4
DRAINAGE DITCHES		
SHALLOW, LESS THAN THREE FEET DEEP	1 PLUS	2, 3, OR 4
DEEP, NOT MOWED	1 PLUS	5 OR 7
POND BANKS, DIKES, LEVEES, DAMS, DIVERSION CHANNELS, AND OCCASIONAL WATER FLOW AREAS		
MOWED AREAS	1 PLUS	2 OR 3
NON-MOWED AREAS	1 PLUS	5 OR 7
FOR HAY OR SILAGE ON DIVERSION CHANNELS AND OCCASIONAL WATER FLOW AREAS	1 PLUS	3 OR 13
HIGHWAYS (2)		

SITE CONDITIONS	NURSE CROP	SEED MIXTURE (SELECT ONE MIXTURE)
NON-MOWED AREAS		
WELL-DRAINED	1 PLUS	5, 7, 8, 9, OR 10
VARIABLE DRAINED	1 PLUS	3 OR 7
POORLY DRAINED	1 PLUS	3 OR 9
AREAS MOWED SEVERAL TIMES PER YEAR	1 PLUS	2, 3, OR 10
UTILITY ROW		
WELL-DRAINED	1 PLUS	5, 8, OR 12 (1)
VARIABLE DRAINED	1 PLUS	3 OR 7
WELL-DRAINED AREAS FOR GRAZING/HAY	1 PLUS	2, 3, OR 13
EFFLUENT DISPOSAL AREAS	1 PLUS	3 OR 4
SANITARY LANDFILLS	1 PLUS	3, 5, 7, 11 (1), OR 12 (1)
SURFACE MINES		
SPOILS, MINE WASTES, FLY ASH, SLAG, SETTLING BASIN RESIDUES AND OTHER SEVERELY DISTURBED AREAS (LIME TO SOIL TEST)	1 PLUS	3, 4, 5, 7, 8, 9,11 (1) OR 12(1)
SEVERELY DISTURBED AREAS FOR GRAZING/HAY	1 PLUS	3 OR 13

RECOMMENDED SEED MIXTURES			
MIXTURE NO.	SPECIES	SEEDING RATES – PLS (1)	
		MOST SITES	ADVERSE SITES
1 (2)	spring oats (spring), or 64 96	64	96
	annual ryegrass (spring or fall), or	10	15
	winter wheat (fall), or	90	120
	winter rye (fall)	56	112
2 (3)	tall fescue, or 75	60	75
	fine fescue, or 40	35	40
	kentucky bluegrass, plus 25 30	25	30
	redtop(4), or	3	3
	perennial ryegrass	15	20
3	birdsfoot trefoil, plus 6 10	6	10
	tall fescue	30	35
4	birdsfoot trefoil, plus	6	10
	reed canarygrass	10	15
5 (5)	Big Bluestem, plus	10	15
	tall fescue, or	20	25
	perennial ryegrass	20	25
6 (5,6)	Big Bluestem, plus	10	15
	annual ryegrass	20	25
7 (5)	birdsfoot trefoil, plus	20	30
	Big Bluestem, plus	20	30
	tall fescue	20	25
8	flatpea, plus	20	30
	tall fescue, or	20	30
	perennial ryegrass	20	25
9 (7)	serecia lespedeza, plus	10	20
	tall fescue, plus	20	25
	redtop(4)	3	3
10	tall fescue, plus	40	60
	fine fescue	10	15
11	deertongue, plus	15	20

RECOMMENDED SEED MIXTURES			
MIXTURE NO.	**SPECIES**	**SEEDING RATES – PLS (1)**	
		MOST SITES	ADVERSE SITES
12(8)	birdsfoot trefoil	6	10
	switchgrass, or	15	20
	big bluestem, plus	15	20
13	birdsfoot trefoil	6	10
	orchardgrass, or	20	30
	smooth bromegrass, plus	25	35
	birdsfoot trefoil	6	10

1. Pure live seed (pls) is the product of the percentage of pure seed times percentage germination divided by 100. For example, to secure the actual planting rate for switchgrass, divide 12 pounds pls shown on the seed tag. Thus, if the pls content of a given seed lot is 35 percent, divide 12 pls by 0.35 to obtain 34.3 pounds of seed required to plant one-acre. All mixtures in this table are shown in terms of pls.

2. If high-quality seed is used, for most sites seed spring oats at a rate of two bushels per acre, winter wheat at 11.5 bushels per acre, and winter rye at one bushel per acre. If germination is below 90 percent, increase these suggested seeding rates by 0.5 bushel per acre.

3. This mixture is suitable for frequent mowing. Do not cut shorter than 4 inches.

4. Keep seeding rate to that recommended in table. These species have many seeds per pound and are very competitive. To seed small quantities of small seeds such as weeping lovegrass and redtop, dilute with dry sawdust, sand, rice hulls, buckwheat hulls, etc.

5. Use for highway slopes and similar sites where the desired species after establishment is Big Bluestem.

6. Use only in extreme southeastern or extreme southwestern PA. Serecia lespedeza is not well adapted to most of PA.

7. Do not mow shorter than 9 to 10 inches.

8. If liming, fertilization, and preparation of seedbed are properly done and if care is taken to drill and cover the seed (or mulch applied), the rate for “most sites” should suffice. However, on eroded or coarse and poorly prepared seedbeds, particularly if the soil is very acidic or infertile, the rate for “adverse sites” should be used.

9. For seed mixtures 11 and 12, only use spring oats or weeping lovegrass (included in mix) as nurse crop.

In lawn areas, permanent cover will be established using the following PENNDOT seed mixture:

PENNDOT FORMULA B				
Seeding Rate	3 lbs. per 1,000 square feet			
Species	**% by Weight**	**Purity %**	**Minimum % Germination**	**Maximum % Weed Seed**
Kentucky Bluegrass	50	98	80	0.20
Perennial Rye	20	98	90	0.15
Red Fescue	30	98	85	0.15

PEM WETLAND SEED MIX		
ERNST CONSERVATION SEED MIX NO. ERNMX-122 FACW Meadow Mix		
Seeding Rate	20 lb per acre, or ½ lb per 1,000 sq ft	
Mix Type	Wet Meadow & Wetland Sites	
Species List	31%	Fox Sedge (Carex vulpinoidea)
	20%	Virginia Wildrye (Elymus virginicus)
	14%	Lurid (Shallow) Sedge (Carex lurida)
	5%	Green Bulrush (Scipus atrovirens)
	4%	Blue Vervain (Verbena hastate)
	3.5%	Wood Reedgrass (Cinna arundinacea)
	3%	Soft Rush (Juncus effuses)
	3%	Blunt Broom Sedge (Carex scoparia)
	3%	Hop Sedge (Carex luputina)
	2%	Sensitive Fern (Onoclea sensibilis)
	2%	Oxeye Sunflower (Heliopsis helianthoides)
	1%	Rattlesnake Grass (Glyceria Canadensis)
	1%	Woolgrass (Scirpus cyperinus)
	1%	Swamp Milkweed (Asclepias incarnata)
	1%	New England Aster (Aster novae-angliae (Symphyotrichum n.))
	1%	Flat Topped White Aster (Aster umbellatus (Doellingeria umbellate))
	0.5%	Joe Pye Weed (Eupatorium fistulosum)
	0.5%	Boneset (Eupatorium perfoliatum)
	0.5%	Ditch Stonecrop (Penthorum sedoides)
	0.5%	Narrowleaf Blue Eyed Grass (sisyrinchlum angustifolium)
	0.5%	Seedbox (Ludwigia alternifolia)
	0.5%	Great Blue Lobelia (Lobelia siphilitica)
	0.5%	Mud Plantain (Water Plantain) (Alisma subcordatum (A. plantago-aquatica))
	0.5%	Square Stemmed Monkeyflower (Mimulus ringens)
	0.4%	Bladder (Star) Sedge (Carex intumescens)
	0.1%	Slender Mountainmint (Pycnanthemum tenuifolium)
	Total 100%	

Planting Specifications for PFO or PSS Wetland Restoration Areas (see ES-0.17 for restoration detail)

Vegetation Planting Type	Size	Species [a]		Wetland Status [b]
Shrub Species	Two to three-foot whip[c]	*Alnus serrulata*	Smooth Alder	OBL
		Cornus amomum	Silky Dogwood	FACW
		Lindera benzoin	Spicebush	FAC
		Viburnum dentatum	Northern arrow-wood	FAC
Tree Species	Containerized (1-inch DBH)[c]	*Acer rubrum*	Red maple	FAC
		Betula alleghaniensis	Yellow Birch	FAC
		Platanus occidentalis	American Sycamore	FACW
		Quercus bicolor	Swamp White Oak	FACW
		Salix nigra	Black Willow	OBL

a – If the listed species is unavailable during planting, a comparable native substitute will be used.

b - USACE Eastern Mountains and Piedmont Wetland Status Trees and shrubs will be planted at a density of at least 400 plants/trees per acre in accordance with USACE guidance

c - DBH = Diameter at breast height.

Liming Rates

Minimum 6 tons per acre at 100% effective neutralizing value (% ENV), unless the soil test determines that a lesser amount is needed. To determine the actual amount of regular lime to apply, divide the amount called for by the soil test by the % ENV for the product used. For example, if 6 tons per acre is needed and the %ENV for the lime used is 88%, divide 6 by 0.88 resulting in 6.8 tons needing to be applied. For dolomitic lime, which has a significant amount of magnesium in it, divide the amount called for by the soil test by the % calcium carbonate equivalent (% CCE) listed for the product instead of the % ENV. The % CCE may be above 100% which accounts for the fact that magnesium has a greater effect per pound than the calcium in regular lime. Note: When a soil test requires more than 8,000 pounds of lime per acre, the lime must be mixed into the top 6 inches of soil.

Fertilization Rates

Apply 10-20-20 at 600 pounds/acre, if top dressed or 1,000 pounds/ac, if incorporated, unless the soil test determines that the rate can be less than these minimums.

SOIL AMENDMENT APPLICATION RATE EQUIVALENTS				
Soil Amendment	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yds.	
AGRICULTURAL LIME	6 TONS	240 LBS.	240 LBS.	or as per soil test; may not be required in agricultural fields
10-20-20 FERTILIZER	1,000 LBS.	25 LBS.	25 LBS.	or as per soil test; may not be required in agricultural fields

Temporary Seeding

Temporary grass cover will be established in the following areas:

1. Where soil stockpiles are to be exposed for a period greater than four (4) days, the stockpile will be seeded.

2. Where vegetative filters must be established below filter bags, a minimum distance of 10 feet will be seeded down slope of the trap outlet.

Temporary Cover - Seed mixture for temporary cover will consist of 100-percent annual ryegrass. Seed will be applied at the rate of 40 lb per acre or as recommended by a local recognized seed supplier approved by the owner's representative. Prior to seeding, apply 1 ton of agricultural grade limestone per acre plus 10-10-10 fertilizer at the rate of 500 lb. per acre and work into soil.

Mulching

The purpose of mulch is to reduce runoff and erosion, prevent surface compaction or crusting, conserve moisture, and control weeds. Mulch will be applied on any area subject to erosion, or which has unfavorable conditions for plant establishment and growth. The practice may be used alone or in conjunction with other structural and vegetative conservation practices, such as waterways, ponds, sedimentation traps or critical area planting. On sediment producing areas where the period of exposure is less than 2 months, mulch materials will be applied according to the following guidelines:

1. Straw mulch will be applied at the rate of three tons per acre. Chemically treated or salted straw is not acceptable as mulch.

2. Straw mulch will be anchored immediately after application by at least one of the following methods.

    A. “Crimped” into the soil using tractor drawn equipment (straight bladed coulter or similar). This method is limited to slopes no steeper than 3:1. Machinery should be operated on

the contour. (Crimping of hay or straw by running it over with tracked machinery is not recommended)

B. Asphalt, either emulsified or cut-back, containing no solvents or other diluting agents toxic to plant or animal life, uniformly applied at the rate of 31 gallons per 1,000 square feet.

C. Synthetic binders (chemical binders) may be used as recommended by the manufacturer to anchor mulch provided sufficient documentation is provided to show that it is non-toxic to native plant and animal species.

D. Lightweight plastic, fiber, or paper nets may be stapled over the mulch according to the manufacturer's recommendations.

Mulched areas will be checked periodically and after each runoff event (e.g. rain, snowmelt, etc.) for damage until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie-down material will be repaired upon discovery.

Protection of Streams and Wetlands

If a stream or wetland crossing or encroachment is required, work will be in accordance with all PADEP permits. Refer to E&SC detail sheets for stream and wetland crossing details for diversion of stream channel flow and protection of wetlands.

1. Contractor will minimize construction area through and along streams. When wetland areas are temporarily disturbed, isolate and stockpile soil for replacement after grading is completed.
2. Native stream bed material will be separated from other spoil for reinstallation after restoration (see the E&S Plan provided in Attachment 12). An evaluation was completed for sheer stress of stream flow against restored native stream bed material. If the evaluation indicated that the stream will not be stable with native material, then rip rap will be used. Site specific waterbody crossing and restoration plans providing direction for the installation of rip rap at these streams are included within the E&S Plans provided in Attachment 12. In these cases where rip rap is used and the stream bed is composed of rock, cobble, or gravel, then the native stone will be used for the top six inches of rip rap. Every effort will be made to segregate the entire top layer of native stone in streams with less than six inches of native stone where rip rap is proposed.

   Furthermore, stream restoration will involve the application of rip rap for bank stabilization must comply with site specific drawings included within the E&S Plan provided in Attachment 12. Rip rap will be used to the minimum extent necessary to stabilize the stream bank, which is typically no more than 12 inches above the normal flow depth often evidenced by a lack of vegetation or a strand line. Stream banks above this elevation will be stabilized with erosion control blanket and revegetated.

3. Immediately upon completion of encroachment or crossing, stabilize stream bed and banks (i.e. seeding, erosion blanket, and native substrate material) prior to removal of temporary E&SC devices.
4. Should excavation extend to within 50 feet of the stream bank, construct compost filter socks (Standard Details on construction plans) parallel to the stream, a minimum of 1 foot beyond disturbed earth, to protect the stream. Disturbed areas within 50 feet of a stream or wetland will be blanketed or matted within 24 hours of initial disturbance for minor streams or 48 hours of initial disturbance for major streams unless otherwise authorized. Seed and mulch all disturbed areas.

Temporary Stream and Wetland Equipment Crossings

No vehicular traffic will be permitted in the streams at any time during construction.

If crossing a stream by vehicles is required to facilitate construction, a temporary stream crossing will be installed for this purpose. Work will be in accordance with PADEP Permit Requirements and the details identified on the E&S plan drawings.

Travel Lanes

Portions of the project LOD have been identified as travel lanes. These areas exist along the project ROW and will be used for travel between HDD workspaces. Some of these areas will also be mechanically-cleared of trees and brush to improve travel and/or line-of-sight for HDD activities. For travel lanes involving mechanical clearing, the LOD limits have been sighted outside of wetlands and most floodplains and floodways. For any portions of the travel lanes that are crossing resources, an equipment bridge/working platform will be installed per details provided in the E&S Plan Sheets (Attachment 2).

Travel lanes have also been labeled on the E&S Plan Sheets and designated as either “ROW-Travel LOD” (temporary impacts) or “ROW-Travel and Clearing LOD” (permanent impacts). Necessary E&S control have been added as well.

Minimization of Soil Compaction

Pre-construction planning and final design has reduced the LOD, and therefore the area subjected to compaction, to the maximum extent while allowing safe installation of the pipeline. During construction, all land disturbance is limited to the defined LOD. Within the LOD, contractors are to minimize land disturbance to the maximum extent. Repeated travel is restricted to travel lanes and travel throughs are limited to those necessary to complete the work. Implementation of construction sequencing ensures the number of passes with equipment and duration of the project is minimized. In wetlands and other sensitive areas, the installation of timber mats (or equal such as composite matting), and limiting equipment and vehicle travel, ensures compaction is minimized. In addition, top soil segregation and restoration BMPs offer significant protection to the layer most vulnerable to compaction. Upon completion of pipeline installation and trench backfill, replace segregated topsoil to pre-construction grades. Contractor is to take every precaution to minimize compaction during placement of topsoil. Provide surface roughening in

accordance with PADEP E&S Pollution Control Program Manual. Surface roughing is the practice of providing a rough soil surface with horizontal depressions for the purpose of reducing runoff velocity, increasing infiltration, aiding the establishment of vegetation, and reducing erosion. During the preparation for seeding on slopes 3H:1V or steeper, unless a stable rock face is provided, surface roughening is to be conducted by tracking the slopes by running tracked equipment (with blades up) across the surface as to leave track marks parallel to the contour. In areas that used stone or timber mats for temporary stabilization and/or access, the stone or mats will be removed and, if needed, the soil will be scarified or ripped to a depth of 8-12 inches to de-compact the soil. After reestablishing preconstruction contours, topsoil will be replaced to a minimum depth of 4-8 inches and seeded and mulched. In agricultural areas, severely compacted areas are to be plowed with a harrow, paraplow, paratill or other equipment before subsoil replacement. Vehicular traffic is to be restricted from areas that are ready to be seeded.

A note consistent with the Department's Manual will be included on all construction plans which states that in areas that used stone or timber mats for temporary stabilization and/or access, the stone or mats will be removed and, if needed, the soil will be scarified or ripped to a depth of 8-12 inches to de-compact the soil. After reestablishing preconstruction contours, topsoil will be replaced to a minimum depth of 4-8 inches and seeded and mulched. Vehicular traffic after restoration should be restricted from areas to prevent soil compaction.

Waste Considerations

The operator will remove from the site, recycle, or dispose of all building materials and wastes in accordance with the PADEP's solid waste management regulations at 25 Pa. Code 260.1 et seq., 271.1 et seq., and 287.1 et seq. The contractor will not illegally bury, dump, or discharge building material or wastes at the site. Excess material brought into the site areas to facilitate construction access will be completely removed prior to rough grading and final surface stabilization. Expected construction wastes will consist of packaging material and sediment cleaned from BMPs. Packaging from the materials brought on site will be disposed of by a licensed hauler. Sediment removed from BMPs will either be spread in a protected area to dry and then recycled as fill material or disposed of off-site. In cases where disposal is necessary, waste materials are to be disposed of at an approved PADEP waste disposal site.

Thermal Impacts

Thermal impacts are most commonly associated with urbanization (i.e., increased impervious surfaces) that results in heated stormwater runoff flowing into receiving waters where it mixes, and potentially increases the base temperature of the surface water in streams. However, another contributing factor for stream temperature is solar exposure (radiant energy input) to the surface water, typically ponded, standing waters. The amount of heat transferred, and the degree of thermal pollution is of importance for fisheries management and the ecological integrity of receiving waters. Among the attributes that determine the contribution of solar energy to thermal impacts are the presence of riparian vegetation, as well as stream

width, depth, flow regime (perennial, intermittent, ephemeral), and orientation. However, a singular linear crossing of minimal width and vegetation clearing is not considered a contributing factor to thermal impacts.

Potential pollution to surface waters from thermal impacts will be minimized by minimizing the clearing of riparian vegetation at stream crossings along the ROW and avoiding the addition/creation of impervious surfaces in riparian areas, The Project does not have thermal impacts. Following construction, permanent seeding will occur as soon as practicable to facilitate vegetative growth during germinating months.

Specifically, thermal impacts will be avoided by implementing the following:

- Siting parallel to and overlapping with existing ROWs to minimize vegetation clearing at stream crossings;
- Reducing the construction ROW width and additional temporary workspaces at stream crossings;
- No grubbing, grading, or clearing of trees will occur within 50 feet of the top of stream bank until pipeline construction/installation is ready to proceed through that area.
- Restoring (seeding) disturbed areas/ROW as soon as practicable and /or directing runoff to vegetated areas to reduce the temperature of runoff prior to discharge into the streams; and,
- Restoring the stream banks and seeding/planting as soon as practicable to facilitate vegetative growth along the stream channel.

Riparian Forest Buffers

A separate waiver request has been prepared and is provided as Attachment 6 to the NOI application. The following summarizes that request. The Pennsylvania Pipeline Project qualifies for an exemption of the riparian forest buffer requirement under Chapter 102.14(d)(1)(ix) for areas within the Chapter 105 permit area. Existing riparian forest buffers within the project area are identified on the E&S plan drawings in Attachment 2 of the E&S Plan.

In addition to the exemption, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

Demonstration of Waiver Necessity

A riparian forest buffer waiver is necessary to complete the intended scope of the pipeline project. The project is from Houston to Delmont, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. The project crosses through Blair County for approximately 23.5 miles, Huntingdon County for approximately 26.2 miles, Juniata County for approximately 3.0 miles, Perry County for approximately 10.4 miles Cumberland County for approximately 33.1 miles, York County for approximately 6.5 miles, Dauphin County for approximately 11.5 miles, Lebanon County for approximately 19.7 miles, Lancaster County for approximately 7.5 miles, and Berks County for approximately 20.4 miles. Due to the linear

nature of the project and the surrounding topography, riparian forest buffers could not be avoided altogether.

Alternatives Analysis

Impacts to environmental resources, including riparian forest buffers, were evaluated during the pipeline routing phase of the project. Field teams were deployed to evaluate alternate routes based on environmental and constructability constraints. The final route that was selected minimizes environmental impacts to the maximum extent practicable while still maintaining the project's overall constructability and ensuring a safe working environment while also taking landowner constraints into consideration. Additionally, several variations of horizontal direction drill profiles were evaluated to minimize pullback areas, additional workspaces, and overall disturbance within riparian forest buffers. Permanent features, such as access roads and block valves, were evaluated to locate the features outside of the riparian forest buffer, where possible.

Demonstration of Minimizing Impacts

All disturbance activities, including those which impact riparian forest buffers, have been reduced to the maximum extent practicable. The LOD has been reduced to 50 feet wide at all stream crossings within the riparian forest buffer area where possible adjacent to the stream area required for crossing and construction. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian forest buffer, the LOD has been reduced to 50 feet wide within 10 feet of the stream banks to limit the proximity of the work areas as per the stream crossing detail from the PADEP manual. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control BMPs. In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian forest buffers where possible.

Meeting Requirements of Chapter 102

All other requirements of Chapter 102 to minimize impacts to riparian buffers are being met in the project's Erosion and Sediment Control Plan and Site Restoration/Post-Construction Stormwater Management Plans which have been designed in accordance with Chapter 102 and in HQ/EV watersheds to implement ABACT controls where non discharge alternatives do not exist. In accordance with Chapter 102, and E&S plan has been developed to minimize the sediment entering the buffer areas through the use of properly designed E&S bmp's such as, but not limited to, waterbars, compost filter sock, diversion berms,slope pipes and erosion control blanket. A site restoration plan is proposed to revegetate the buffer areas within the right

of way. The post construction stormwater management plan has been designed to control runoff rate and volume at permanent above ground facilities through infiltration practices

Stormwater Runoff Analysis

The pre-construction drainage patterns surrounding the project will be maintained. All disturbed areas within the Major Modification LOD will be restored to a meadow in good condition or lawn where required by landowners. As a result of restoring the pipeline ROW and associated workspaces associated with the Major Modification to a meadow in good condition and maintaining pre-construction drainage patterns, there will be no increase in stormwater runoff rate or volume attributed to those areas.

3.5 MAINTENANCE AND INSPECTION PROCEDURES

Maintenance to the temporary E&SC structures will be performed by the contractor during the construction period. A log or written report showing dates that E&S bmp's were inspected as well as any deficiencies found and the date they were corrected shall be maintained on the site and be made available to regulatory agency officials at the time of inspection.

Compost Filter Socks

- Accumulated sediment will be removed as required, and in all cases where uniform accumulations are half the above ground height of the filter sock. Any accumulated earth behind the filter sock will be disposed of by the contractor in such a manner that the removed earth will not be excessively eroded and transported into a waterbody.
- The filter sock installation will be inspected weekly and after every runoff event. Loosened support stakes will be removed and new stakes driven. Filter socks will be maintained and repaired as per manufacturer specifications.
- Temporary E&SCs will be removed by the contractor only after a uniform 70-percent perennial vegetative coverage has been established across the disturbed area. Temporary E&SCs will be disposed of by the contractor at an approved PADEP waste disposal facility.

Rock Construction Entrances

- Rock construction entrance thickness will be constantly maintained to the specified dimensions by adding rock. A stockpile will be maintained on site for this purpose.

Access Road

- The proposed access roads will be inspected weekly and after runoff events. Additional aggregate will be applied to the road as needed to maintain an adequate thickness, and ruts will be smoothed to prevent channelizing flow.

Water bars

- Water bars will be inspected weekly, daily on active roads, and after each runoff event.
- Damaged or eroded water bars will be restored to original dimensions within 24 hours of inspection.
- Maintenance of water bars will be provided until roadway, skid trail or ROW has achieved permanent stabilization.

Pumped Water Filter Bags

- Filter bags will be replaced when they become half full of sediment.
- Filter bags will be inspected daily. If any problem is detected, pumping will cease immediately and not resume until the problem is corrected.

Vegetation

Seeded areas will be inspected weekly and after each runoff event. Necessary repairs will be made immediately.

Mulch

Mulched areas will be checked periodically and after severe storms for damage until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie-down material will be repaired upon discovery.

Inspection and Maintenance

Until the site is stabilized, E&SC BMP's will be maintained properly. Preventative and corrective maintenance work, including clean-out, repair, replacement, regarding, reseeding, mulching, and reknitting will be performed as soon as practical. If E&SC BMP's fail to perform as expected, replacement BMP's, or modifications to those installed will be required. The following inspection and maintenance practices will be used to maintain E&SCs on-site during activities.

- E&SC measures will be in-place and inspected at the end of the workday. E&SC measures will also be inspected after each runoff event. The contractor will immediately repair any deficiencies.
- Maintenance and inspection of sediment control facilities will conform to PADEP Chapter 102 and 105 rules and regulations.
- Sediment will be removed when it accumulates half the aboveground height of the compost filter sock. All undercutting of erosion of the toe anchor will be repaired with compacted backfill material. The contractor will adhere to the manufacturer's recommendations for replacing filter socks due to weathering.

- Sediment removed from filter socks and any other control devices will be mixed in with the other waste soil on the construction site and properly disposed of as discussed in Section 3.4.
- Sediment will be removed from the sediment removal facilities associated with wash racks as necessary. Sediment deposited on paved roadways will be removed and returned to the construction site daily, at a minimum.
- Re-vegetated areas will be inspected for bare spots, washouts, and healthy growth during the construction. Identified bare spots and washouts will be repaired as soon as practical.
- All soil stockpiles that are to remain more than 4 days will be seeded with temporary grass, as noted in the seeding specification on the construction drawings.
- The contractor will make certain that all runoff is directed to the sedimentation control devices.
- All sedimentation control measures will remain in place until the disturbed areas are stabilized and a uniform 70-percent perennial vegetative cover is established. Any area not achieving a 70-percent vegetative cover will be re-seeded and mulched within 24 hours of detection.

If E&S BMPs are found to be inoperative or ineffective during an inspection, PADEP should be contacted within 24 hours, followed by the submission of a written noncompliance report to PADEP within 5 days of the initial contact.

3.6 ANTIDEGRADATION

The Horse Valley Major Modification reroute is located within an HQ watershed. A combination of non-discharge alternatives and the use of ABACT BMPs will be implemented during construction to protect and maintain the existing water quality of the receiving waters. For all evaluated HQ/EV special protection watersheds listed in Table 1 non discharge alternatives were evaluate and included when possible. For areas where non discharge alternatives were not available the ABACT site restoration BMPs were incorporated. Due to the linear nature of this project all of the HQ/EV special protection watersheds received the same incorporation of ABACT site restoration BMPs throughout the pipeline.

Non-discharge alternatives were evaluated to minimize accelerated erosion and sedimentation and achieve zero net change in runoff between the pre and post-construction conditions. The extent of the disturbed area will be minimized, and the duration of disturbance will be minimized by stabilizing disturbed areas as soon as practicable.

ABACT BMPs will be used onsite to protect and maintain the existing water quality of receiving waters.The following ABACT E&S BMPs will be used onsite:

- Wash racks located at rock construction entrances,
- Compost filter sock is to be used,
- Erosion control blanket on disturbed areas within 100 feet of a receiving surface waters, where applicable, and on slopes 3:1 or steeper,
- Implementation of a PPC plan.

4.0 SITE RESTORATION PRACTICES

Following completion of pipeline installation and trench backfilling, the pipeline right of way, associated workspaces, and temporary access roads shall be returned to the general grade present prior to pipeline installation to maintain pre-construction drainage patterns. After completion of major construction work, topsoil that was stockpiled during construction will be placed along the ROW. Grounds disturbed by any of the operations necessary to complete the work for this project within the ROW are to be permanently seeded, or if specified, sodded, unless occupied by structures, paved, or designated as a permanent access road. Disturbed areas, which are at final grade, shall be seeded and mulched once final grades are achieved. The permanent seed mixture will restore disturbed areas to a meadow in good condition or better. If seeding cannot be completed within a four (4) day period due to weather conditions, the disturbed area will be mulched with straw at the rate of three (3) tons per acre. This straw will be anchored using a method described in Section 3.4.

4.1 BMP DESCRIPTION AND CONSTRUCTION SEQUENCE

A generalized construction sequence is provided below. The construction sequence is intended to provide a general course of action to conform to the applicable regulatory agency requirements for restoration and post-construction stormwater management of the site. Necessary steps for proper and complete execution of work pertaining to this plan, whether specifically mentioned or not, are to be performed by the contractor. The contractor will comply with all requirements listed in this section. The contractor may be required to alter controls based on the effectiveness of controls or differing conditions encountered in the field. The appropriate county conservation district and DEP shall be contacted and must approve any deviation to the authorized plans.

A pre-construction meeting is required prior to the start of any construction activity. The Pennsylvania Department of Environmental Protection (PADEP) or applicable county conservation district, contractors, the landowner, appropriate municipal officials, and the plan preparer must be invited to this meeting at least 7 days in advance.

General Construction Sequence

1. Grade surface to finished grade elevations as soon as practicable following completion of pipe installation.

2. Surface roughening will be utilized to rough the soil surface with horizontal depressions for the purpose of reducing runoff velocity, increasing infiltration, aiding the establishment of vegetation, and reducing erosion. Surface roughening should be applied to slopes 3H:1V or steeper unless a stable rock face is provided or it can be shown that there is not a potential for sediment pollution to surface waters. For roughened surfaces within 50 feet of a surface water, and where blanketing of seeded areas is proposed as the means to achieving permanent stabilization, spray-on type blankets are

recommended. Surface roughening shall be accomplished using dozers affixed with grouser tracked equipment. Dozers shall run up and down the slopes leaving horizontal grooves perpendicular to the slope. Dozer blades shall be raised and not used during surface roughening. Where compaction does occur, contractor shall scarifiy the soil or provide additional roughening such as deep ripping or chisel ripping to restore the area to a minimal compacted state. In areas of proposed infiltration, soils shall be amended to 2' below grade. See Soil Amendment and Restoration construction sequence below.

3. Place topsoil from topsoil stockpiles as the upper layer of backfill. Topsoil shall not be placed when the subgrade is frozen or when it is excessively wet or dry and shall not be handled when in a frozen or muddy condition.

4. Remove gravel and geotextile from the temporary access roads and scarify the soil. Refer to step 2 of this sequence to address compaction at access roads. After addressing compaction concerns, place topsoil that was stripped prior to installation of the access roads.

5. Immediately seed and mulch disturbed areas in accordance with the permanent seeding schedule once final grade is established and topsoil is placed.

6. Maintain erosion and sedimentation control devices until site work is complete and a uniform 70-percent perennial vegetative cover is established. Regrade and revegetate areas disturbed during the removal of the erosion and sediment controls.

Soil Amendment and Restoration Construction Sequence

1. Grade surface to finished grade elevations as soon as practicable following completion of pipe installation.

2. In the designated soil amendment area, till the ground and mix in the compost at a ratio of 2:1 (soil:compost) to a depth of 24 inches.

3. Immediately seed and mulch disturbed areas once final grade is established in accordance with the permanent seeding schedule.

4. Maintain erosion and sedimentation control devices until site work is complete and a uniform 70% perennial vegetative cover is established.

5.0 HYDROSTATIC TESTING AND ASSOCIATED PERMITTING

There are no hydrostatic testing locations impacted as a result of the Horse Valley Major Modification.

6.0 REFERENCES

Erosion and Sediment Pollution Control Program Manual, Commonwealth of Pennsylvania, Department of Environmental Protection, Office of Water Management, March 2012.

Stormwater Management for Construction Activities - Developing Pollution Prevention Plans and Best Management Practices, United States Environmental Protection Agency, Office of Water, 1993.

Pennsylvania Stormwater Best Management Practices Manual Draft, Pennsylvania Department of Environmental Protection, Bureau of Watershed Management, October 2009.

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Soil Survey of Perry County, Pennsylvania, United States Department of Agriculture, Soil Conservation Service

DCNR, 2016. *Invasive Plants in Pennsylvania, Crown Vetch,* Coronilla varia. Accessed October 25, 2016. http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_010284.pdf.

TABLE 1:

Receiving Waters

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Blair Run (5)	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Blair Run	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Poplar Run (1)	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Dry Run (2)	Blair	Juniata	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Dry Run (20)	Blair	Juniata	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Blair Gap Run (1)	Blair	Juniata	TROUT STOCKING	TSF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Beaverdam Branch (3)	Blair	Blair	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Frankstown Branch Juniata River (15)	Blair	Blair	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Frankstown Branch Juniata River (2)	Blair	Blair	WARM WATER FISHES	WWF	Yes	Industrial Point Source-Siltation	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Frankstown Branch Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No	Industrial Point Source-Siltation	No	N/A
UNT to Oldtown Run (11)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Oldtown Run	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Robinson Run (8)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Juniata River (22)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Frankstown Branch Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	Yes	Industrial Point Source-Suspended Soilds	No	N/A
UNT to Piney Creek (6)	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Piney Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Clover Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Raystown Branch Juniata River (37)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
James Creek	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to James Creek (13)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Raystown Lake (9)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Little Trough Creek (7)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Little Trough Creek	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Smith Run (11)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Smith Run	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Hares Valley Creek (9)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Hares Valley Creek	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Scrub Run	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Scrub Run (1)	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Singers Gap Run	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Singers Gap Run (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hill Valley Creek (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Hill Valley Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Juniata River (3)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Aughwick Creek (8)	Huntingdon	Shirley	TROUT STOCKING	TSF	No	N/A	No	N/A
Aughwick Creek (2)	Huntingdon	Shirley	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Fort Run (7)	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes	N/A	No	N/A
Fort Run	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes	N/A	No	N/A
UNT to Blacklog Creek (6)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Blacklog Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to George Creek (19)	Huntingdon	Tell	COLD WATER FISHES	CWF	No	N/A	No	N/A
George Creek	Huntingdon	Tell	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to George Creek (7)	Juniata	Lack	COLD WATER FISHES	CWF	No	N/A	No	N/A
George Creek	Juniata	Lack	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Tuscarora Creek (20)	Juniata	Lack	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Tuscarora Creek	Juniata	Lack	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Horse Valley Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Horse Valley Run (7)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Shermans Creek (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shermans Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Shultz Creek (4)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shultz Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Shaeffer Run (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shaeffer Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Bull Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Laurel Run	Perry	Jackson	EXCEPTIONAL VALUE	EV	Yes	Atmospheric Deposition-Metals	No	N/A
UNT to Laurel Run (7)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
UNT to South Branch Laurel Run (1)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
South Branch Laurel Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
UNT to Double Gap Creek (12)	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Doubling Gap Creek	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Double Gap Creek (2)	Cumberland	Upper Frankford	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Rock Run	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Rock Run (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (8)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Bloser Creek (5)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
Bloser Creek	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Locust Creek (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Locust Creek (8)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
Locust Creek	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (3)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Opossum Creek (9)	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No	N/A	No	N/A
Opossum Creek	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No	N/A	No	N/A
UNT to Conodoguinet Creek (30)	Cumberland	North Middleton	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation; Construction- Siltation; Habitat Modification-Flow Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Meetinghouse Run (5)	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
Meetinghouse Run	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
Conodoguinet Creek	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (13)	Cumberland	Middlesex	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Letort Spring Run (3)	Cumberland	Middlesex	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Letort Spring Run (3)	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No	N/A	No	N/A
Letort Spring Run	Cumberland	Middlesex	COLD WATER FISHES	CWF	No	N/A	No	N/A
Letort Spring Run	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (10)	Cumberland	Middlesex	WARM WATER FISHES	WWF	No	N/A	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
Hogestown Run	Cumberland	Silver Spring	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Trindle Spring Run	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Trindle Spring Run (1)	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Yellow Breeches Creek (13)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cedar Run (5)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes	Source Unknown- Pathogens	No	N/A
Yellow Breeches Creek	Cumberland	Lower Allen	COLD WATER FISHES	CWF	No	N/A	No	N/A
Yellow Breeches Creek	York	Fairview	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Yellow Breeches Creek (12)	York	Fairview	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Marsh Run (8)	York	Fairview	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Susquehanna River (9)	York	Fairview	WARM WATER FISHES	WWF	No	N/A	No	N/A
Susquehanna River	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	Yes	Source Unknown- PCB	No	N/A
UNT to Lisa Lake (9)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Susquehanna River (2)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	Urban Runoff/Storm Sewers- Cause Unknown; Habitat Modification- Cause Unknown	No	N/A
UNT to Swatara Creek (11)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	N/A	No	N/A
Swatara Creek	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Swatara Creek (3)	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Swatara Creek (6)	Dauphin	Londonderry	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation; Other- Siltation	No	N/A
UNT to Iron Run (3)	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Iron Run (13)	Dauphin	Derry	WARM WATER FISHES	WWF	No	N/A	No	N/A
Iron Run	Dauphin	Derry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Iron Run	Dauphin	Conewago	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Spring Creek (23)	Dauphin	Conewago	WARM WATER FISHES	WWF	Yes	Agriculture- Organic Enrichment/Low D.O.; Agriculture- Siltation	No	N/A
UNT to Spring Creek (7)	Lebanon	South Londonderry	WARM WATER FISHES	WWF	Yes	Agriculture- Organic Enrichment/Low D.O.; Agriculture- Siltation	No	N/A
UNT to Killinger Creek (8)	Lebanon	South Londonderry	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Buckholder Run (5)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Buckholder Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Gingrich Run (4)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Gingrich Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Bachman Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients; Crop Related- Siltation	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Beck Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
Snitz Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Snitz Creek (1)	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Quittapahilla Creek (1)	Lebanon	South Lebanon	TROUT STOCKING	TSF	Yes	Urban Runoff/Storm Sewers- Flow Alterations; Bank Modifications- Other Habitat Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Hammer Creek (6)	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Hammer Creek	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Middle Creek	Lebanon	Heidelberg	WARM WATER FISHES	WWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Middle Creek (5)	Lebanon	Heidelberg	WARM WATER FISHES	WWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cocalico Creek (9)	Lancaster	Clay	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cocalico Creek (22)	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
Cocalico Creek	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
Harnish Run	Lancaster	West Cocalico	WARM WATER FISHES	WWF	Yes	Habitat Modification; Other Habitat Alterations; Source Unknown- Pathogens	No	N/A
UNT to Harnish Run (3)	Lancaster	West Cocalico	WARM WATER FISHES	WWF	Yes	Habitat Modification; Other Habitat Alterations; Source Unknown- Pathogens	No	N/A
UNT to Little Cocalico Creek (4)	Lancaster	West Cocalico	TROUT STOCKING	TSF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Little Cocalico Creek (5)	Berks	South Heidelberg	TROUT STOCKING	TSF	No	N/A	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Cacoosing Creek (8)	Berks	South Heidelberg	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Cacoosing Creek	Berks	South Heidelberg	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Cacoosing Creek (15)	Berks	Spring	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Little Muddy Creek	Berks	Spring	TROUT STOCKING	TSF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Wyomissing Creek (13)	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	Yes	Source Unknown-Pathogens	Yes	Cause Unknown; Siltation
Wyomissing Creek	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	Yes	Source Unknown-Pathogens	Yes	Cause Unknown; Siltation
Allegheny Creek	Berks	Brecknock	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Allegheny Creek (19)	Berks	Brecknock	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Sleepy Hollow Run (2)	Berks	Brecknock	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Sleepy Hollow Run (2)	Berks	Brecknock	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Rock Run (8)	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
Rock Run	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
UNT to Rock Run	Berks	Robeson	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
Hay Creek	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No	N/A	No	N/A
Hay Creek	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hay Creek (12)	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hay Creek (12)	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No	N/A	No	N/A
UNT to Hay Creek	Berks	New Morgan	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Conestoga River (1)	Berks	New Morgan	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other-Organic Enrichment/Low D.O.; Source Uknown-Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.
UNT to East Branch Conestoga River (12)	Berks	New Morgan	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other-Organic Enrichment/Low D.O.; Source Uknown-Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
East Branch Conestoga River	Berks	Caernarvon	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other- Organic Enrichment/Low D.O.; Source Uknown- Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
BLAIR COUNTY			
Juniata	UNT to Blair Run	4	1 (Wild Trout)
Juniata	UNT to Dry Run	16	6 (Wild Trout)
Blair	UNT to Dry Run	5	2 (Wild Trout)
Blair	UNT to Beaverdam Branch	2	0
Blair	UNT to Frankstown Branch Juniata River	21	3 (Wild Trout)
Frankstown	UNT to Oldtown Run	9	3 (Wild Trout)
Frankstown	UNT to Robinson Run	7	0
Frankstown	UNT to Frankstown Branch Juniata River	41	10 (Wild Trout)
Woodbury	UNT to Piney Creek	3	1 (Wild Trout)
Woodbury	UNT to Clover Creek	2	2 (Wild Trout)
HUNTINGDON COUNTY			
Penn	UNT to James Creek	28	0
Penn	UNT to Raystown Branch Juniata River	2	0
Union	UNT to Little Trough Creek	10	0
Union	UNT to Smith Run	5	0
Union	UNT to Hares Valley Creek	7	0
Union	UNT to Scrub Run	3	0
Shirley	UNT to Singers Gap Run	2	0
Shirley	UNT to Juniata River	4	0
Shirley	UNT to Aughwick Creek	6	0
Shirley	UNT to Fort Run	9	0
Shirley	UNT to Blacklog Creek	11	0
Tell	UNT to George Creek	14	0
JUNIATA COUNTY			
Lack	UNT to George Creek	2	0
Lack	UNT to Tuscarora Creek	5	0
PERRY COUNTY			
Toboyne	UNT to Horse Valley Run	2	2 (Wild Trout)
Toboyne	UNT to Sherman Creek	7	4 (Wild Trout)
Toboyne	UNT to Shultz Creek	4	4 (Wild Trout)
Toboyne	UNT to Schaeffer Run	4	1 (Wild Trout)
Jackson	UNT to South Branch Laurel Run	6	3 (Wild Trout); 1 (WT/EV Stream)

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

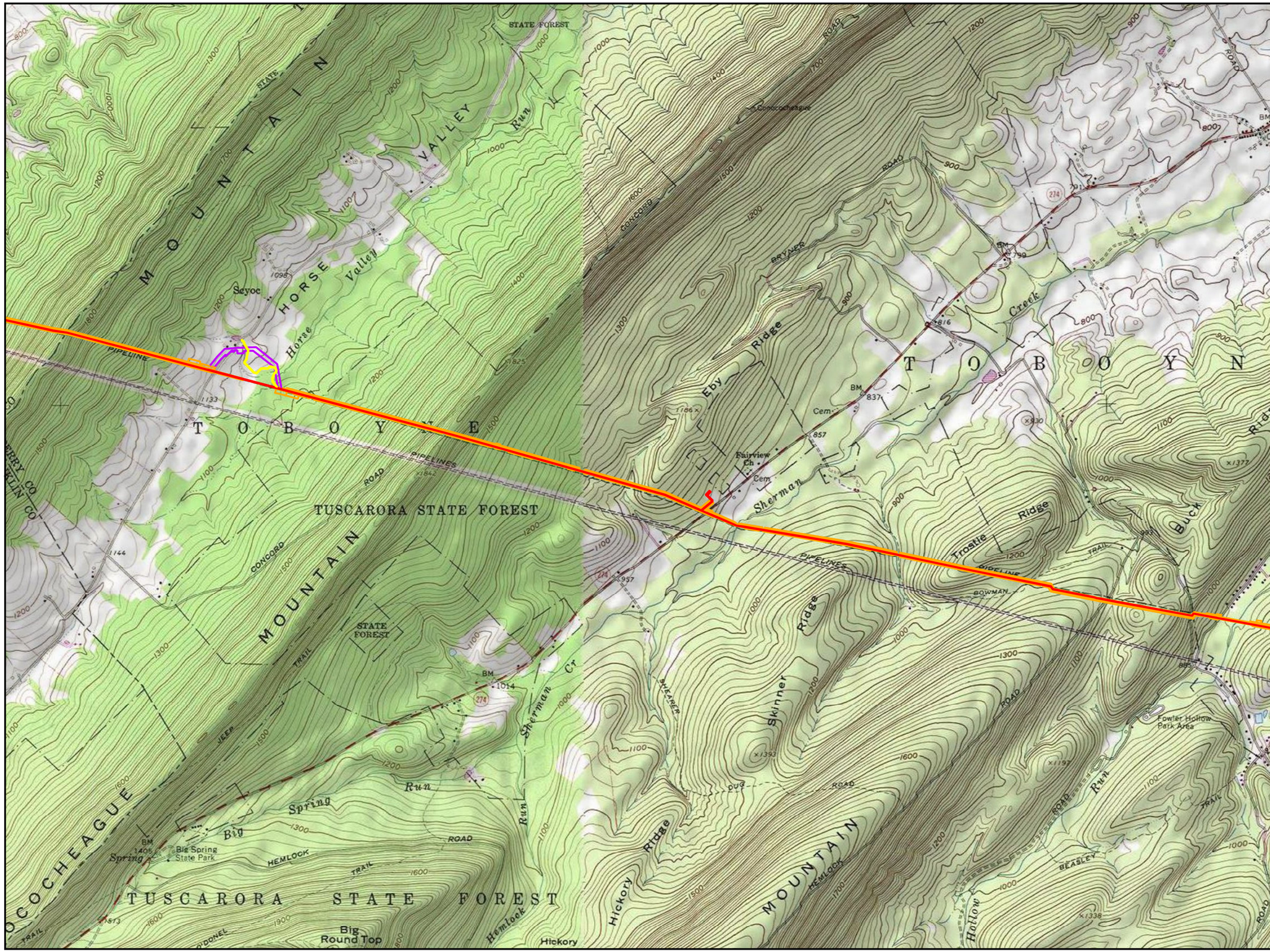
Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
CUMBERLAND COUNTY			
Lower Mifflin	UNT to Doubling Gap Creek	11	0
Upper Frankford	UNT to Doubling Gap Creek	1	0
Upper Frankford	UNT to Rock Run	2	0
Upper Frankford	UNT to Conodoguinet Creek	10	0
Upper Frankford	UNT to Bloser Creek	14	0
Upper Frankford	UNT to Locust Creek	1	0
Lower Frankford	UNT to Locust Creek	10	1 (PuWS)
Lower Frankford	UNT to Opossum Creek	13	0
Lower Frankford	UNT to Conodoguinet Creek	10	0
North Middleton	UNT to Conodoguinet Creek	6	0
North Middleton	UNT to Meetinghouse Run	2	1 (PuWS)
North Middleton	UNT to Conodoguinet Creek	23	5 (PuWS)
Middlesex	UNT to Conodoguinet Creek	9	0
Middlesex	UNT to Letort Spring Run	5	3 (Wild Trout)
Silver Spring	UNT to Hogestown Run	2	0
Upper Allen	Unt to Yellow Breeches Creek	5	0
Lower Allen	UNT to Cedar Run	2	1 (Wild Trout)
Lower Allen	Unt to Yellow Breeches Creek	8	0
YORK COUNTY			
Fairview	Unt to Yellow Breeches Creek	7	0
Fairview	UNT to Marsh Run	4	0
Fairview	UNT to Susquehanna River	17	0
DAUPHIN COUNTY			
Lower Swatara	UNT to Susquehanna River	13	0
Highspire	UNT to Susquehanna River	2	0
Lower Swatara	UNT to Swatara Creek	3	0
Middletown	UNT to Swatara Creek	3	0
Londonderry	UNT to Swatara Creek	18	0
Londonderry	UNT to Iron Run	1	0
Derry	UNT to Iron Run	8	0
Conewago	UNT to Spring Creek	12	0

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
LEBANON COUNY			
South Londonderry	UNT to Spring Creek	4	0
South Londonderry	UNT to Killinger Creek	3	0
South Annville	UNT to Buckholder Run	5	0
South Annville	UNT to Gingrich Run	2	0
West Cornwall	UNT to Beck Creek	2	0
West Cornwall	UNT to Snitz Creek	2	0
South Lebanon	UNT to Quittapahilla Creek	1	0
South Lebanon	UNT to Hammer Creek	1	1 (Wild Trout)
Heidelberg	UNT to Hammer Creek	6	3 (Wild Trout)
Heidelberg	UNT to Middle Creek	5	0
LANCASTER COUNTY			
West Cocalico	UNT to Cocalico Creek	19	5 (Bog Turtle)
West Cocalico	UNT to Harnish Run	4	0
West Cocalico	UNT to Little Cocalico Creek	6	0
BERKS COUNTY			
South Heidelberg	UNT to Little Cocalico Creek	5	0
South Heidelberg	UNT to Cacoosing Creek	14	8 (Wild Trout)
Spring	UNT to Cacoosing Creek	7	2 (Wild Trout)
Spring	UNT to Little Muddy Creek	7	0
Cumru	UNT to Wyomissing Creek	8	2 (Wild Trout); 1 (WT/Bog Turtle)
Brecknock	UNT to Allegheny Creek	16	12 (Wild Trout)
Brecknock	UNT to Rock Run	4	2(Wild Trout)
New Morgan	UNT to Hay Creek	11	3 (Wild Trout/EV Stream)
Caernarvon	UNT to East Branch Conestoga River	9	0

ATTACHMENT 1:

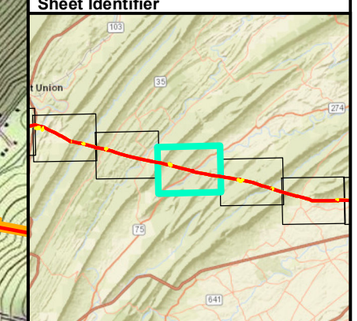
USGS Location Maps



Legend

- Major Modification I LOD
- Previously Approved LOD
- Block Valve/Station
- Access Road
- Alignment Centerline

Sheet Identifier



N

Feet: 0 1,000 2,000

Meters: 0 300 600

PROJECT LOCATION MAP
ATTACHMENT 1-10
PENNSYLVANIA PIPELINE PROJECT
NOVEMBER 12, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
JUNIATA, PERRY COUNTY, PENNSYLVANIA

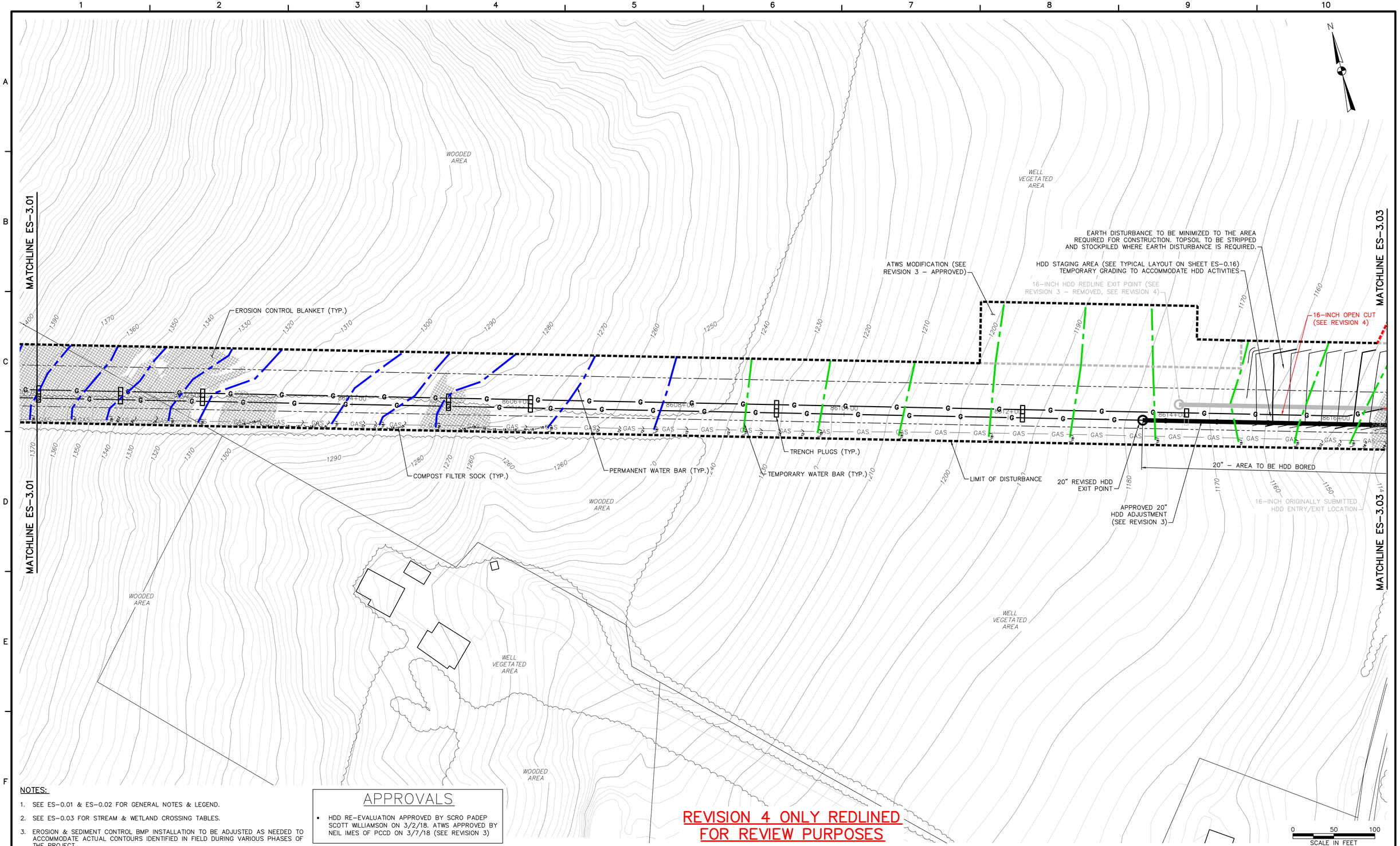
TETRA TECH

Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Quadrangles being displayed are Blairs Mills

PGH: P:\GIS\SUNOCO\MARINER EAST 2\MXD\PPP ESC\GIP\PENNP\PELINE_SOUTHCENTRAL_USGS_ESCGP.MXD 02/14/19 TT

ATTACHMENT 2:

E&S Plan Sheets



NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

APPROVALS

- HDD RE-EVALUATION APPROVED BY SCRO PADEP SCOTT WILLIAMSON ON 3/2/18. ATWS APPROVED BY NEIL IMES OF PCCD ON 3/7/18 (SEE REVISION 3)

REVISION 4 ONLY REDLINED FOR REVIEW PURPOSES

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www.tetratech.com
661 ANDERSEN DRIVE – FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040

REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS
2	RS	5/25/17	DRAWINGS PROVIDED TO FIELD
3	RS	1/19/18	HDD AND ATWS MODIFICATION
4	RS	1/11/19	16" BORE MODIFICATION

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK 2/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-16" & 1-20" PROPOSED WELDED STEEL NATURAL GAS PIPELINES

PERRY COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 2 OF 35

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-3.02
SHEET 3.02 OF 61

R:_Marcellus Shale Projects\Sunoco\5958 – Penn Pipeline Project\10 – Perry\E&S\5958ES003.02.dwg : PIT NICHOLE.NAJESKI 2/19/2019 6:53:36 AM

NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

GEOHAZARD MITIGATION MEASURES LEGEND:

A – THE CONTRACTOR SHOULD EXERCISE ADDITIONAL CARE IN MANAGING STORMWATER, SEEPS, AND STOCKPILES.

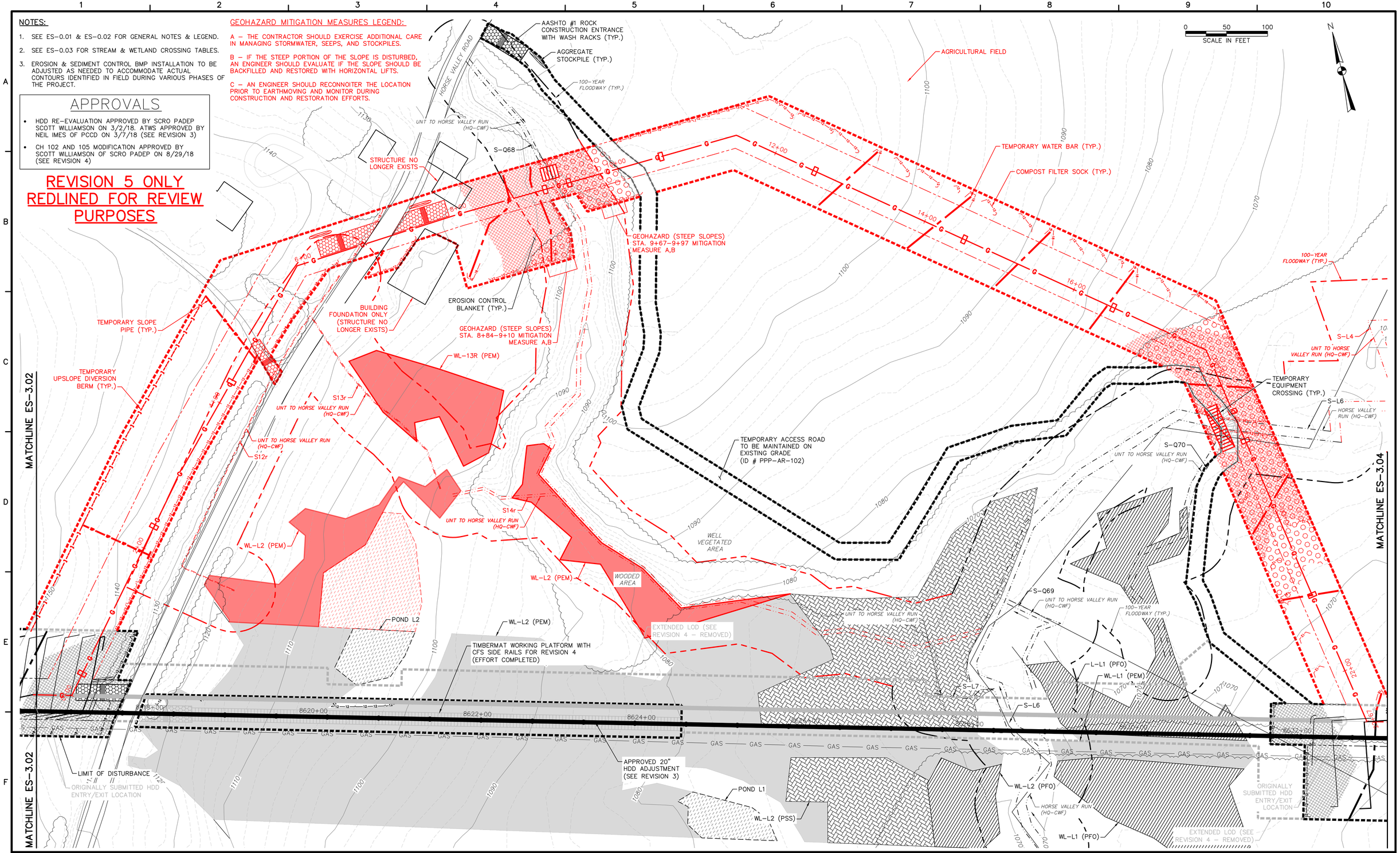
B – IF THE STEEP PORTION OF THE SLOPE IS DISTURBED, AN ENGINEER SHOULD EVALUATE IF THE SLOPE SHOULD BE BACKFILLED AND RESTORED WITH HORIZONTAL LIFTS.

C – AN ENGINEER SHOULD RECONNOITER THE LOCATION PRIOR TO EARTHMOVING AND MONITOR DURING CONSTRUCTION AND RESTORATION EFFORTS.

APPROVALS

- HDD RE-EVALUATION APPROVED BY SCRO PADEP SCOTT WILLIAMSON ON 3/2/18. ATWS APPROVED BY NEIL IMES OF PCCD ON 3/7/18 (SEE REVISION 3)
- CH 102 AND 105 MODIFICATION APPROVED BY SCOTT WILLIAMSON OF SCRO PADEP ON 8/29/18 (SEE REVISION 4)

REVISION 5 ONLY REDLINED FOR REVIEW PURPOSES



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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS
2	RS	5/25/17	DRAWINGS PROVIDED TO FIELD
3	RS	1/19/18	HDD AND ATWS MODIFICATION
4	RS	8/15/18	EXTENDED LOD AND ADDED MATTING FOR GROUTING EFFORT (REMOVED)
5	RS	2/4/19	16" RE-ROUTE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ROBERT F. SIMCIK
ENGINEER
PE-075643-E
2/4/19

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-16" & 1-20" PROPOSED WELDED STEEL NATURAL GAS PIPELINES

PERRY COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 3 OF 35

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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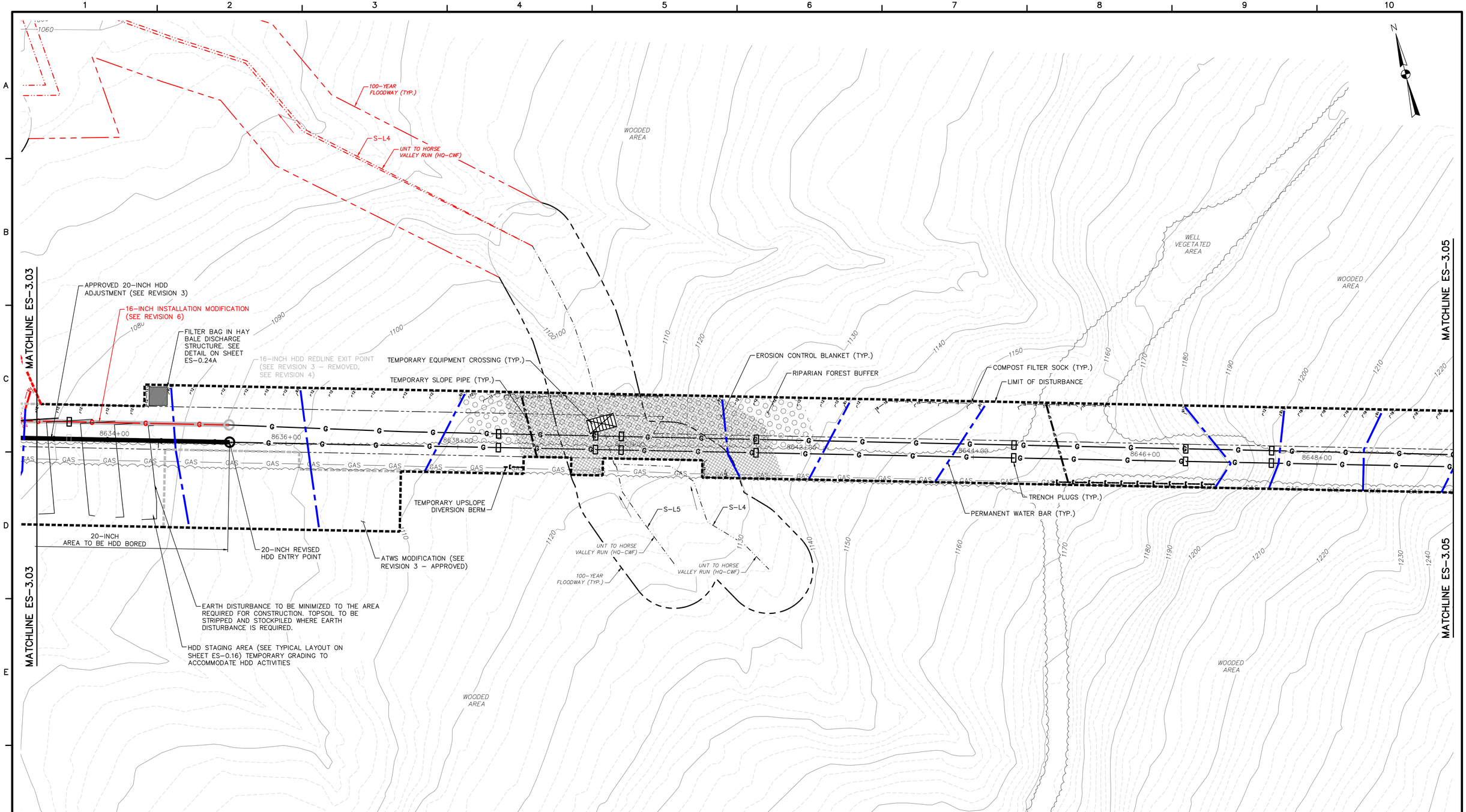
ES-3.03
SHEET 3.03 OF 61

R:_Marcellus Shale Projects\Sunoco\5958 – Penn Pipeline Project\10 – Perry\E&S\5958ES003.03.dwg PIT NICHOLE.NAJESKI 2/22/2019 1:27:31 PM



NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

APPROVALS

- HDD RE-EVALUATION APPROVED BY SCRO PADEP SCOTT WILLIAMSON ON 3/2/18. ATWS APPROVED BY NEIL IMES OF PCCD ON 3/7/18 (SEE REVISION 3)

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REVISIONS

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1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS
2	RS	5/25/17	DRAWINGS PROVIDED TO FIELD
3	RS	1/22/18	ATWS AND HDD MODIFICATION. HAY BALE STRUCTURE ADDED
4	RS	1/11/19	16" BORE MODIFICATION

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK 2/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-16" & 1-20" PROPOSED WELDED STEEL NATURAL GAS PIPELINES

PERRY COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 4 OF 35

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-3.04
SHEET 3.04 OF 61

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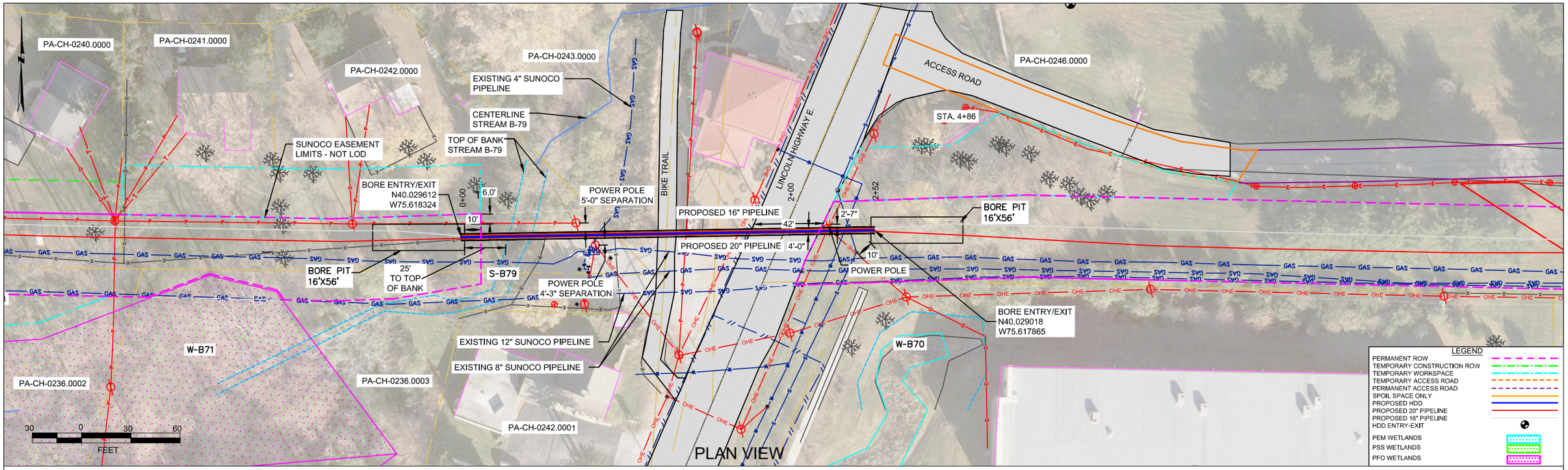
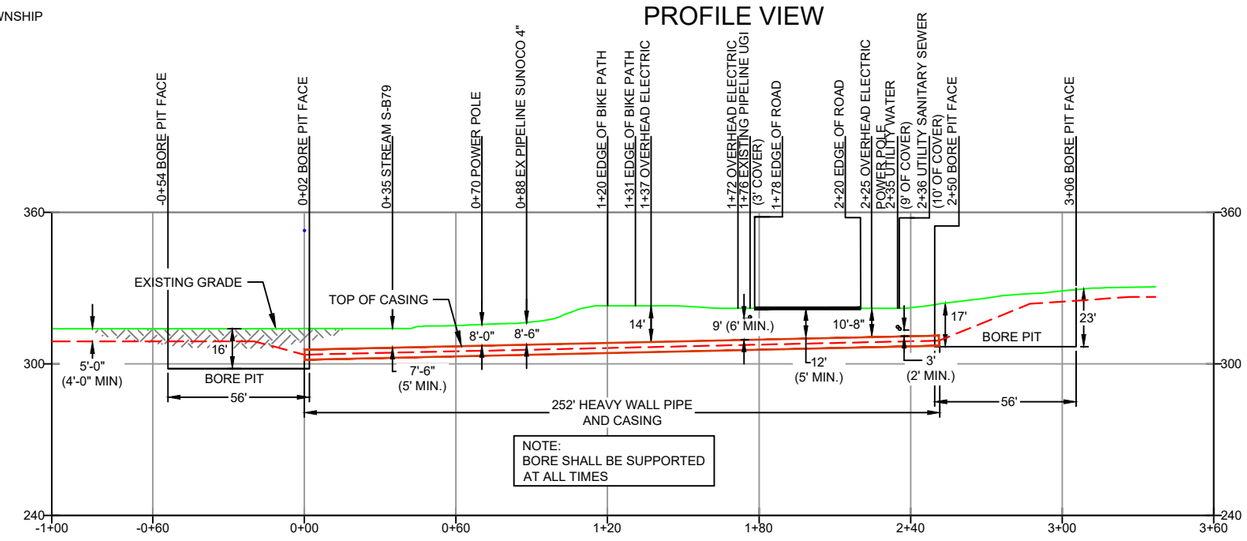
ATTACHMENT 3:

HDD Plans, Profiles and Auger Bore Drawings



CHESTER COUNTY, PENNSYLVANIA - WEST WHITELAND TOWNSHIP

PROFILE VIEW



CONSTRUCTION NOTES

1. 20" AND 16" PIPE WILL BE BUNDLED TOGETHER AND INSTALLED INTO 48" x 0.750" W.T. x X-52 CASING USING AUGER BORE METHOD.
2. HORIZONTAL PIPE LENGTH (L) = 252'
   PIPE LENGTH (S) = 252'
3. 20" WELDED STEEL PIPE: 20" OD x 0.456" WT, X-65, API-5L, PSL2, ERW, BFW, DRL COATING 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
4. 16" WELDED STEEL PIPE: 16" OD x 0.438" WT, X-70, API-5L, PSL2, ERW, BFW, DRL COATING 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. 20" DESIGN PRESSURE: 1480 PSIG
6. 16" DESIGN PRESSURE: 2100 PSIG
7. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
8. THE COATING ON THE CARRIER PIPE SHALL BE INSPECTED IMMEDIATELY PRIOR TO ITS INSTALLATION AND ALL DAMAGED COATING SHALL BE REPAIRED IN ACCORDANCE WITH SUNOCO'S PIPELINE COATING SPECIFICATIONS.
9. INSTALL CATHODIC PROTECTION TEST LEADS AS SPECIFIED ON THE ALIGNMENT SHEETS OR SUNOCO CORROSION TECHNICIAN.
10. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
11. WELDED JOINTS INSIDE R.O.W. SHALL BE 100% X-RAYED.
12. CONTRACTOR WILL MAINTAIN A MINIMUM 4' OF COVER TO THE TOP OF PIPE USING FIELD BENDS.
13. CONTRACTOR WILL MAINTAIN A MINIMUM 24" OF COVER FROM ALL EXISTING UTILITIES.
14. CONTRACTOR WILL MAINTAIN A MINIMUM 5' OF COVER FROM BOTTOM OF STREAMS.
15. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
16. IN ADDITION TO THE SITE-SPECIFIC INFORMATION PROVIDED IN THIS DRAWING, GENERAL REQUIREMENTS INCLUDED IN ALIGNMENT SHEETS, PERMITS AND APPROVAL FROM FEDERAL, STATE AND LOCAL AGENCIES ALSO APPLY.
17. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
18. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP. FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REF. DRAWING

DWG NO		DWG NO	DESCRIPTION
ES-6.68	TO	ES-6.68	EROSION & SEDIMENT PLAN
SHEET 45	TO	SHEET 45	AERIAL SITE PLAN

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
0	ISSUED FOR CONSTRUCTION	LKR	02/11/19	RMB	02/11/19	AMC	02/11/19

Sunoco Logistics Partners L.P.

TETRA TECH ROONEY
(303) 792–5911

SUNOCO PIPELINE, L.P.

AUGER BORE (CASED)
LINCOLN HWY E
PENNSYLVANIA PIPELINE PROJECT

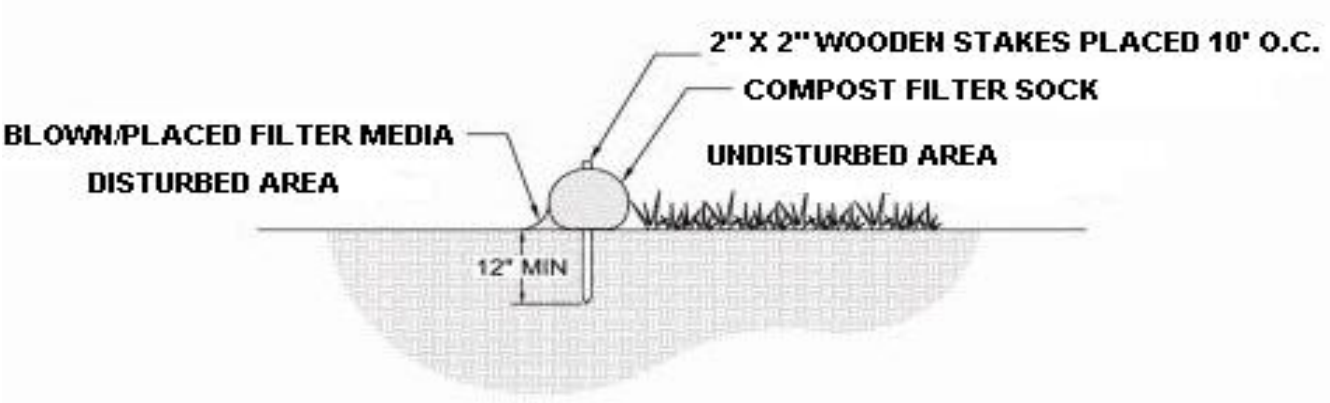
SCALE: 1"=60' | DWG. NO.: PA-CH-0245.0000-RD

ATTACHMENT 4:

Design Calculations and Construction Details

STANDARD E&S WORKSHEET #1
Compost Filter Socks

PROJECT NAME: Sunoco Mariner East
LOCATION: Perry County
PREPARED BY: Emily Zapinski DATE: 2/19/2019
CHECKED BY: Robert Simcik DATE: 2/19/2019



SOCK NO.	Dia. In.	LOCATION	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
1	12	0+50 to 5+00	12.0	100
2	18	5+00 to 6+00	10.0	200
3	12	7+00 to 7+50	10.0	20
4	12	8+00 to 9+00	8.0	50
5	12	9+00	35.0	20
6	12	9+50 to 10+00	20.0	40
7	12	10+00 to 12+00	5.7	70
8	12	12+00 to 13+00	2.0	100
9	12	13+00 to 17+00	7.5	80
10	12	17+00 to 18+00	5.0	80
11	12	18+00 to 18+50	4.0	50
12	12	18+50 to 19+50	5.7	70
13	12	20+00 to 20+50	5.0	80
14	12	21+00 to 22+00	5.3	150

ATTACHMENT 5:

Limiting Soil Characteristics Table, Soil Descriptions,

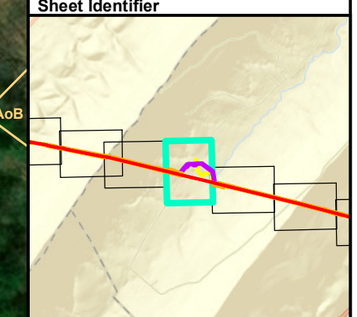
Soil and Geological Maps, KARST Plan

Soils Maps

Legend

- Stationing
- Major Modification I LOD
- Previously Approved LOD
- Block Valve/Station
- Access Road
- Alignment Centerline
- Natural Resources Conservation Service (NRCS) Soils & Code

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

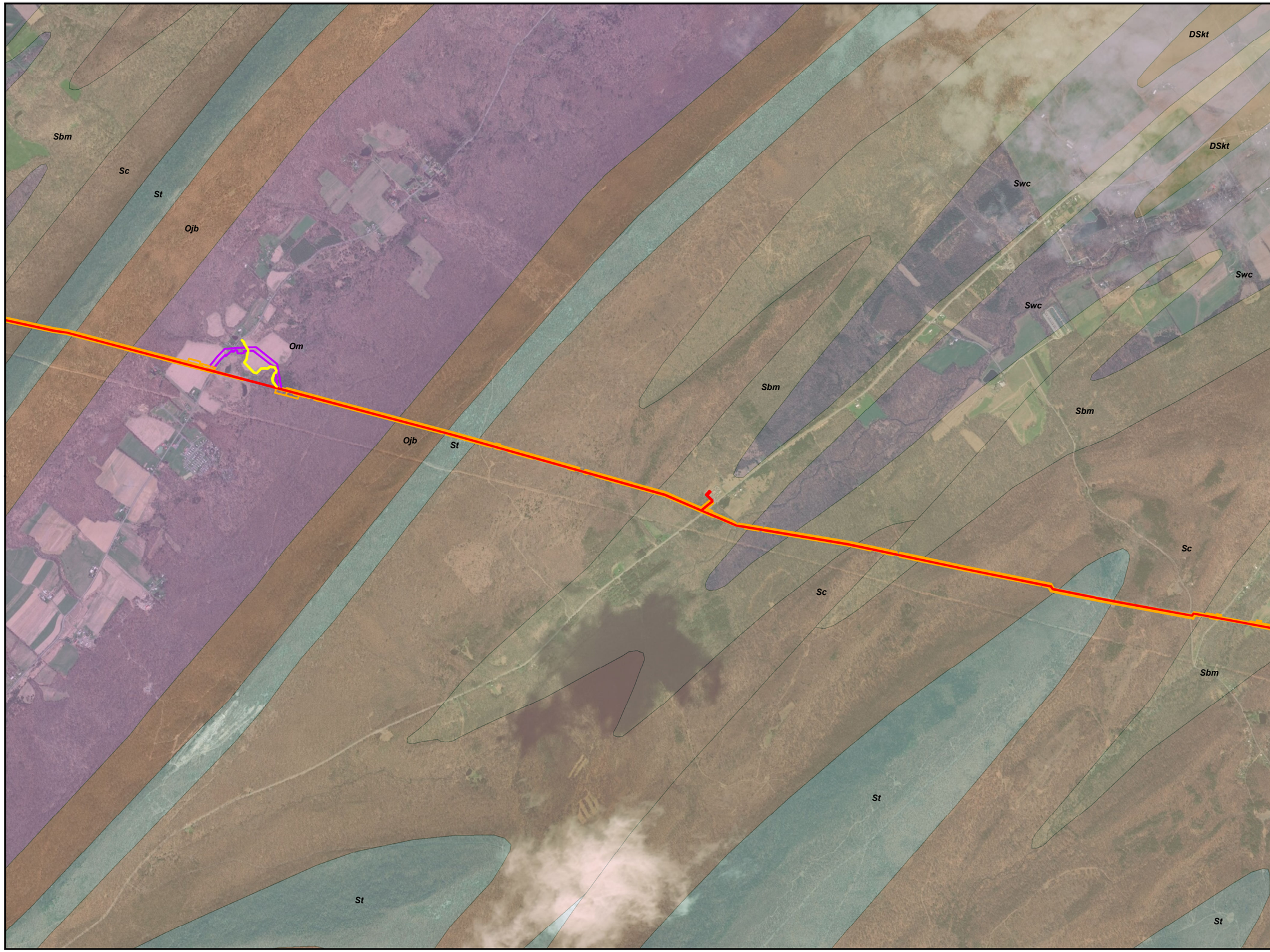
NRCS SOILS MAP
ATTATCHMENT 5-105
PENNSYLVANIA PIPELINE PROJECT
AUGUST 14. 2017 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PERRY COUNTY, PA

TETRA TECH

Notes:
Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2013 ESRI and its data suppliers).

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PPP ESC\GIS\PENNPIPELINE_SOUTHCENTRAL_SOILS_ESCGP.MXD 02/14/19 TT

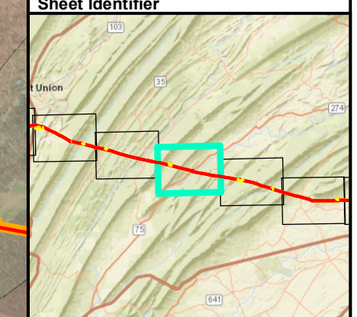
Formations Maps



Legend

- Alignment Centerline
- Block Valve/Station
- Access Road
- Major Modification I LOD
- Limit of Disturbance
- Keyser and Tonoloway Formations Undevided (DSkt)
- Juniata and Bald Eagle Formations undivided (Ojb)
- Martinsburg Formation (Om)
- Bloomsburg and Mifflintown Formations undivided (Sbm)
- Clinton Group (Sc)
- Tuscarora Formation (St)
- Wills Creek Formation (Swc)

Sheet Identifier



N

0 1,000 2,000 Feet

0 300 600 Meters

GEOLOGIC UNIT MAP
ATTACHMENT 5-10
PENNSYLVANIA PIPELINE PROJECT
NOVEMBER 12, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
JUNIATA, PERRY COUNTY,
PENNSYLVANIA

TETRA TECH

Notes:
Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2013 ESRI and its data suppliers).

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ATTACHMENT 13:

Geohazard Evaluation

TETRA TECH

MEMO

To:	Rob Simcik, Tetra Tech
Cc:	Megan Carson, Tetra Tech
From:	Bill Smith, PE, Tetra Tech
Date:	2/20/2019
Subject:	**ME2 Horse Valley Rd Reroute Major Modification - Desktop Geohazard Evaluation**

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
WILLIAM C. SMITH
ENGINEER
038102E

2/22/19

Tetra Tech performed a desktop geotechnical review of the proposed Horse Valley Road reroute using publicly available information to identify areas of potential concern along the proposed alignment and access roads with respect to potential geologic hazards. References included the following:

- PASDA, LiDAR topography, 2006 (UTM NAD83 Zone 17 Feet).
- PASDA, Karst features, PADCNR, 2007.
- PADCNR Scans of USGS Landslide Inventory Maps for PA. PADCNR 8/29/2017.
- NCRS Soil Survey for Perry County, PA, Web Soil Survey.
- Perry County Multi-Hazard Mitigation Plan, 2014. Perry County, June 2, 2014.
- Tri-County Regional Planning Commission, 2017. Regional Growth Management Plan, 2040 Update. 9/28/2017.
- PADEP (2018) https://www.dep.pa.gov/Citizens/My-Water/PublicDrinkingWater/Pages/Arsenic-in-Drinking-Water.aspx
- PADEP (2016) Technology Enhanced Naturally Occurring Radioactive Materials (TENORM) Study Report
- http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=5815&DocName=01%20PENNSYLVANIA%20DEPARTMENT%20OF%20ENVIRONMENTAL%20PROTECTION%20TENORM%20STUDY%20REPORT%20REV%201.PDF%20
- US Geological Survey (2006). Arsenic in Coal. Fact Sheet 2005-3152
- US Geological Survey (2013). Arsenic Concentrations, Related Environmental Factors, and the Predicted Probability of Elevated Arsenic in Groundwater in Pennsylvania. Scientific Investigations Report 2012-5257.

Figure 1 depicts the pipeline right-of-way and the 600' study corridor for the geohazard evaluation. This figure shows documented and suspected landslides, steep slopes, karst features, and soils that are prone to slipping.

A separate coal and mining review was conducted and is included as Attachment A.

Tetra Tech, Inc.
661 Andersen Drive, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

USGS Landslide Inventory Review

The Major Modification alignment does not intersect any areas of old landslides or active or recently active landslides as designated by USGS. The Perry County Multi-Hazard Mitigation Plan indicates that Perry County has a low level of landslide incidents.

Topographic Review for Recent Landslides

Recent PASDA LiDAR topography was reviewed for evidence of suspected landslides or earthflow. The Major Modification alignment does not intersect any suspected landslides based on topographic review.

Steep Slopes

Steep slopes (greater than 2 horizontal to 1 vertical) were evaluated along the pipeline alignment. Steep slopes along the pipeline alignment are located in the following approximate areas:

- Station 8+84 to 9+10, and
- Station 9+67 to 9+97.

Soil Type Review

The soil types were assessed to ascertain which types intersected the pipeline and access roads. Each soil type and the corresponding Soil Slippage Potential, as designated by NCRS, are listed below. The soil slippage potential is the hazard that a mass of soil will slip when vegetation is removed, soil water is at or near saturation, and other normal practices are applied.

Soils along the Horse Valley Road Major Modification include:

Soil Symbol	Map Unit Name	Slippage Rating
Aw	Atkins silt loam	NR
BhB	Berks channery silt loams, 3 to 8 percent slopes, very stony	NR
BrA	Brinkerton silt loam, 0 to 3 percent slopes	NR
BrB	Brinkerton silt loam, 3 to 8 percent slopes	NR

NR = No Rating

Soil types are overlaid on the alignment on Figure 1. There are no soils that have a high soil slippage rating along the pipeline LOD.

Karst/Sinkhole Formations

There are no PA DCNR karst features in the major modification alignment.

Coal and Mining Review

The coal and mining review is provided in Attachment A and summarized here.

There are no coal seams or coal bearing units in Perry County. Research of available published information indicates no deep, underground or surface mining has occurred or is permitted along the modification route

In the Ridge and Valley physiographic province, dark shales, sulfide mineralized areas, fractured rocks and rocks with little calcareous material have the potential to produce acidic discharges; however, according to PGS (2005), the Martinsburg Formation is not noted as acid-producing.

If coal or black shales are encountered during excavation for the project, the potential impact from acid producing minerals is expected to be minimal due to the shallow excavation and most of these shallow areas would not contain pollution-forming minerals as the material is expected to be highly weathered. BMPs will be used to mitigate potential impacts from encountering acid-producing rock formations.

Radiation

Most soils and rocks contain low-levels of naturally occurring radioactive material (NORM). This material can be concentrated through physical or chemical processing resulting in technologically enhanced NORM called TENORM. Examples of TENORM containing materials include fire brick, water and wastewater treatment residuals, coal ash and decorative polished rock commonly used in building or home construction. The three primary naturally radioactive elements are potassium, thorium, and uranium. Both potassium and thorium are typically found in insoluble minerals and unlikely to present any issues. Uranium is common in marine, organic-rich, black shales, which are the primary radioactive mineral bearing formations, but sometimes occurs in non-marine, organic-rich, black shales.

Formations designated by the PADEP that pose a high radioactive risk include the Antes Formation (Utica), Mandata Formation, Marcellus Formation, Burket Member of the Harrell Formation, and Lockatong Formation. None of these formations are found near the surface in southwestern Pennsylvania or the project area, and this project will not involve Marcellus/Utica drill cuttings or flowback fluids.

Arsenic

Arsenic occurs naturally in trace amounts in soil, water, rocks, including coal (within the pyrite and organic portions), and can be in mine drainage. While coal and associated trace mineral Arsenic, is prevalent throughout southwest Pennsylvania and the project area, the project is not crossing any known mining waste areas which may have elevated levels of arsenic.

Mitigation Plan

The following areas of the Horse Valley Road Major Modification are at an increased risk of soil slippage or sliding from a geologic hazard.

Station	Potential Geologic Hazard	Mitigation Measures
Station 8+84 to 9+10	Steep slopes	The contractor should exercise additional care in managing stormwater, seeps, and stockpiles. If the steep portion of the slope is disturbed, an engineer should evaluate if the slope should be backfilled and restored with horizontal lifts.

Station 9+67 to 9+97	Steep slopes	The contractor should exercise additional care in managing stormwater, seeps, and stockpiles. If the steep portion of the slope is disturbed, an engineer should evaluate if the slope should be backfilled and restored with horizontal lifts.

Conclusions/Recommendations

Based on this desktop geohazard evaluation, the Horse Valley Road Major Modification does not intersect any known or suspected landslide areas but does intersects several areas of steep slopes that constitute potential geohazards, and mitigation measures may be warranted. Suggested mitigation measures are outlined above to focus inspection efforts and call attention to several areas requiring special attention by inspectors and engineers during construction and restoration to enable prevention and early detection of a problem if one develops.

*** End ***

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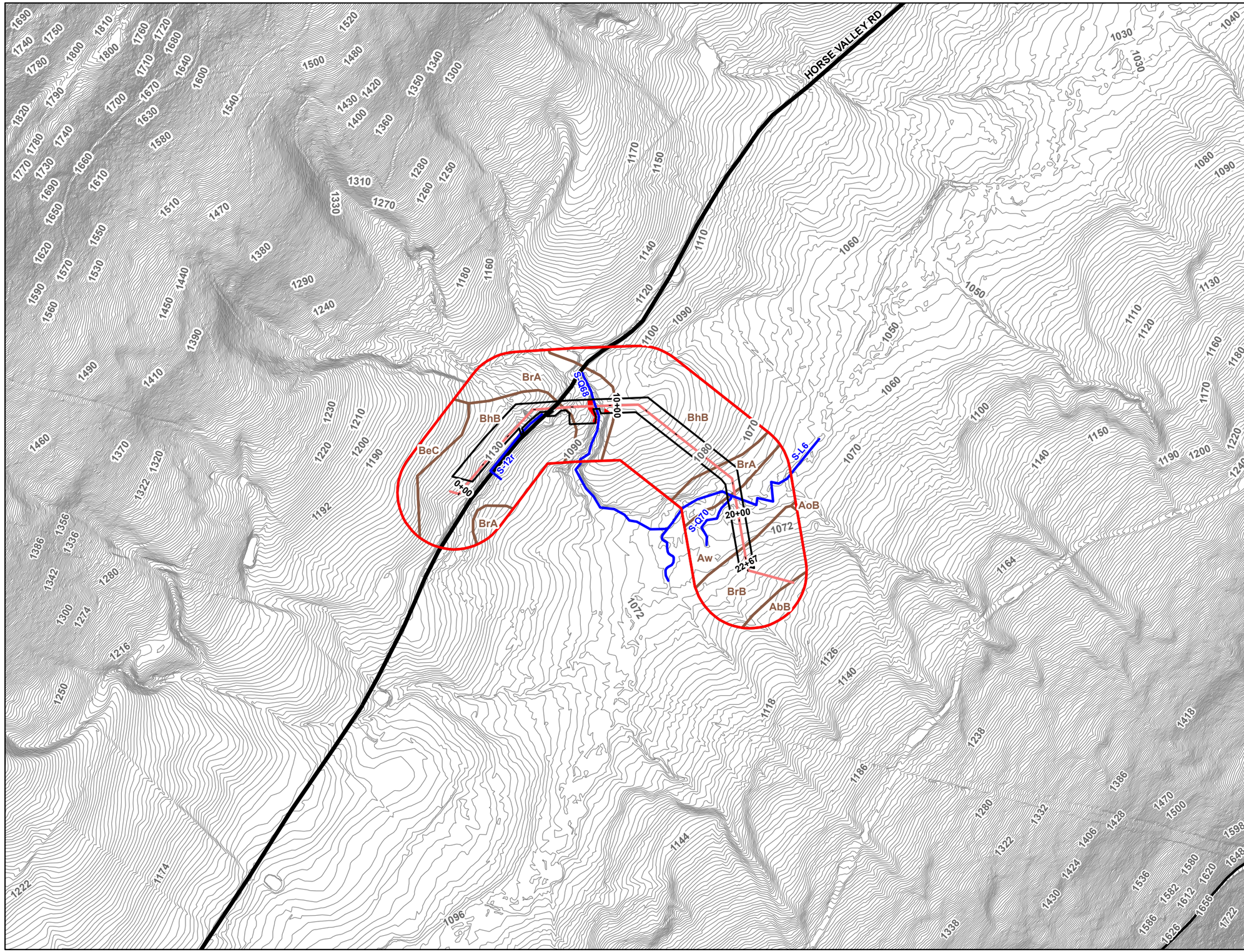
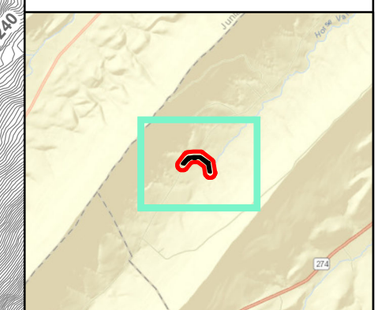


Legend

- PA State Road
- PA Local Road
- Centerline
- Stream
- DCNR Karst Feature
- 300ft Buffer
- Limit of Disturbance
- Soil Boundary
- Active or Recently Active Landslide, USGS
- Old Landslide, USGS
- Suspected Landslide Area, Topographic Review
- Slope>2:1
- 0+00 2' Contour
- Pipe Station

Sheet Identifier



N

Feet: 0 250 500

Meters: 0 76.2 152.4

FIGURE 1
GEOHAZARD EVALUATION
PENNSYLVANIA PIPELINE PROJECT
HORSE VALLEY MAJOR MODIFICATION
SUNOCO LOGISTICS, L.P.
PERRY COUNTY,
PENNSYLVANIA

TETRA TECH

PASDA LIDAR TOPOGRAPHY, 2006
(UTM NAD83 ZONE 17 FEET).

Attachment A

Coal and Mining Review

PPP Horse Valley Major Modification

February 20, 2019

Sunoco Pipeline L.P.
535 Fritztown Road
Sinking Spring, PA 19608

Subject: Pennsylvania Pipeline Project- Horse Valley Major Modification
Acid-Forming Formations, Coal, and Mining Review
Perry County, Pennsylvania

Tetra Tech, Inc. (Tetra Tech) has prepared this review for Sunoco Pipeline L.P. (SPLP) to evaluate the coal and mining along the proposed Horse Valley Major Modification Project located in Toboyne Township, Perry County, Pennsylvania.

The purpose of this modification for a change in the route and installation method for the 16-inch diameter pipeline previously permitted as the Horse Valley Horizontal Directional Drill (HDD). This permit request is to re-route around a wetland/stream complex. Construction activities will involve tree removal, clearing and grubbing within the ROW, trenching, pipe installation, and site restoration.

Site Description
The project area crosses the Allegheny Mountain Section and Appalachian Mountain Section of the Ridge and Valley Province. Bedrock underlying the project area consists of Upper to Middle Ordovician Age, Martinsburg Formation. The Martinsburg formation consists of weathered shale and slate with thin beds of siltstone and sandstone.

Coal and Mining Conditions
There are no coal seams or coal bearing units in Perry County, refer to attached DCNR Map 11, Distribution of Pennsylvania Coals. Research of available published information indicates no deep, underground or surface mining has occurred or is permitted for the modification route (eMap).

Evaluation of Potential of Encountering Acid-Producing Formations
In the Ridge and Valley physiographic province, dark shales, sulfide mineralized areas, fractured rocks and rocks with little calcareous material have the potential to produce acidic discharges (PGS, 2005). Geologic units with rock types that may contain sulfide-bearing minerals have the potential to generate acidic drainage. Acidic discharges are the result of down-dip drainage of ground water that has intersected and reacted with the sulfide-bearing minerals. However, acidic drainage may not always occur within those units.

Tetra Tech, Inc.
661 Andersen Drive, Pittsburgh, PA 15220
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

If coal or black shales are encountered during excavation for the project, the potential impact from acid producing minerals is expected to be minimal due to the shallow excavation for the pipeline trench (less than 7 feet). It is our opinion that most of these shallow areas would not contain pollution-forming minerals as the material is expected to be highly weathered and the majority of the pollution-forming minerals leached from the material due to years of weathering cycles. The low risk of acid drainage from shallow weathered material is also noted in PADEP's *How to Avoid and Handle Acid-Producing Rock Formations Encountered during Well Site Development*.

No coal-bearing rocks or AMD discharges are noted within the project area on eMAP. According to PGS (2005), the Martinsburg Formation is not noted as acid-producing.

Measures to Prevent or Mitigate Acidic Discharges
If the trench excavation encounters an acidic discharge, changes to the volume or chemistry are not anticipated. The trenching would not increase or decrease the volume of acidic discharges because the volume is controlled by precipitation and hydro-geologic parameters. The chemistry of acidic discharges is not anticipated to change due to the shallow excavation into weathered material.

Several measures will be implemented to reduce the potential and mitigate for pollution from trench excavation activities that encounter coal, black shale, or acidic discharges. These measures are as follows:

- When coal or black shale is encountered during the excavation, the excavated coal or black shale will be covered with tarps, mats, or blankets. Water is to be directed away from the temporary stockpiled coal and black shale and the trench until the material is returned to the trench.
- If water accumulates in the trench within the areas of excavated coal or black shale, use a field pH meter to test the pH of the water. If the pH is between 6.0 to 9.0 standard units, inclusive, pump water that accumulates in the trench through a filter bag and slowly discharge to a well vegetated area. If the water pH is not within 6.0 to 9.0 range, collect the water and transfer to an approved treatment facility.
- Backfill the trench with the removed material and conduct alkaline addition by following PADEP's *How to Avoid and Handle Acid-Producing Rock Formations Encountered during Well Site Development*. Fact Sheet 5600-FS-DEP4284.
- Additional trench plugs may be needed to limit water encountering the coal material along the sides of the trench. Trench plugs to seal off the coal seam should consist of clay.
- Perform immediate stabilization of the pipe ROW after installation of the pipe by returning the area to original topographic grade.
- Prepare the disturbed area for permanent seeding with the use of lime and fertilizer. It is recommended to test the soil in areas of past surface/strip mines, or where coal or black shale are near the surface to determine the optimum liming rate. In the absence of testing, apply at 6 tons/acre. Limestone is applied to neutralize the acidity in soil. Blending of soils is recommended to mix potentially acidic materials with materials that have buffering capacity.
- Immediately mulch and seed all disturbed areas with the temporary and/or permanent seed mixture. PADEP and Penn State University have identified seed mixes that are more suited to acidic conditions and should be applied in strip mined areas or other areas where coal and black shale are near the surface.
- Monitor the areas until the disturbed areas are stabilized and a uniform 70-percent perennial vegetative cover is established.
- If coal or black shale is to be hauled offsite, waste materials are to be disposed of at an approved DEP waste site (permitted coal refuse area or landfill).

TETRA TECH

Closing

If you have any questions or comments, please feel free to contact me at 412-921-8051 or heather.trexler@tetratech.com.

Sincerely,

Heather Trexler, P.G.
Project Manager, Energy and Natural Resources Department

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
HEATHER ANNE TREXLER
GEOLOGIST
PG004798

Enclosures

References

Pennsylvania Department of Conservation and Natural Resources. 2019. Pennsylvania Geologic Data Exploration (PaGEODE) http://www.gis.dcnr.state.pa.us/geology/index.html

Pennsylvania Department of Environmental Protection. 2019. eMapPA http://www.depgis.state.pa.us/emappa/

Pennsylvania Department of Environmental Protection (PADEP). 2014. How to avoid and handle acid-producing rock formations encountered during well site development. Fact Sheet 5600-FS-DEP4284

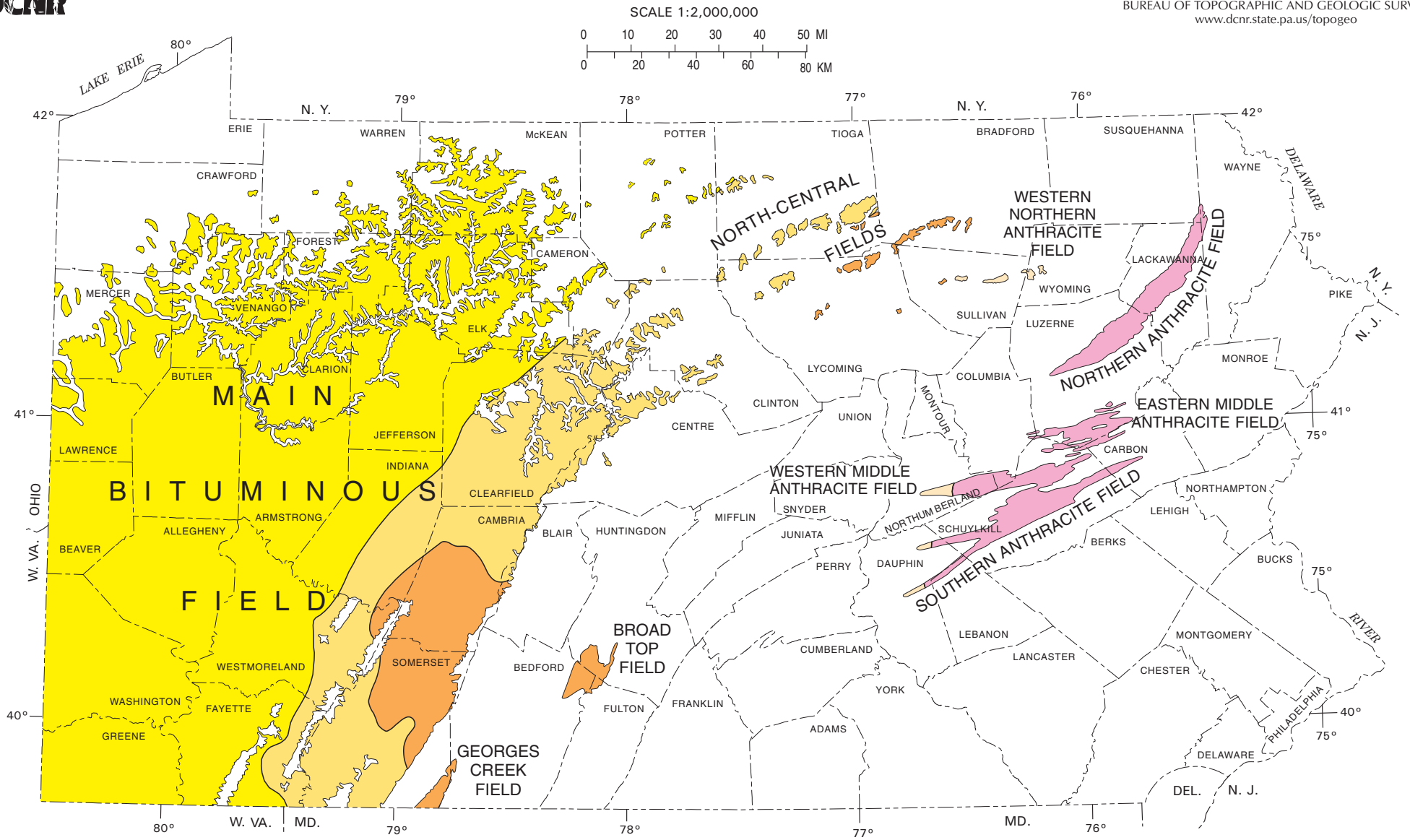
Pennsylvania Geologic Society (PGS). 2005. Geologic units containing potentially significant acid-producing sulfide minerals. Pennsylvania Geological Survey. 4th Ser. Open-File Report OFMI 05-01.1.

Figures

MAP 11

DISTRIBUTION OF PENNSYLVANIA COALS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF
CONSERVATION AND NATURAL RESOURCES
BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY
www.dcnr.state.pa.us/topogeo



EXPLANATION

BITUMINOUS FIELDS

- High-volatile bituminous coal
- Medium-volatile bituminous coal
- Low-volatile bituminous coal

ANTHRACITE FIELDS

- Semi-anthracite
- Anthracite

Prepared by Bureau of Topographic and Geologic Survey.
Third Edition, Revised, 2000; Third Printing, 2008.

2200–MP–DCNR0855
Printed on Recycled Paper

4. ACT 14 NOTIFICATIONS AND RECEIPTS

TETRA TECH

PITT-02-19-067

February 26, 2019

Project Number 212IC-BF-00037

Perry County
25 West Main Street
New Bloomfield, Pennsylvania 17068

Reference: Sunoco Pipeline, L.P. (SPLP)
Pennsylvania Pipeline Project
Major Modification-Horse Valley

To Whom It May Concern:

This municipal notice, under the requirements of Acts 14, 67, 68, and 127, is to inform you that our client, Sunoco Pipeline, L.P. (SPLP), is applying for coverage under the Erosion and Sediment Control General Permit (ESCGP-3) for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing or Treatment Operations or Transmission Facilities and for coverage under Chapter 105 Joint Permit for Water Obstruction and Encroachment.

Project Name: Pennsylvania Pipeline Project

Applicant Name: Sunoco Pipeline, L.P.
525 Fritztown Road
Sinking Spring, PA 19608

Project Description: Sunoco Pipeline, L.P. (SPLP) proposes a Major Modification to the Pennsylviana Pipeline Project within Toboyne Township, Perry County. The Major Modification consists of a change in the route and installation method for the 16-inch diameter pipeline from a Horizontal Directional Drill (HDD) to an open cut installation. The reroute will increase the limits-of-disturbance by 3.94 acres and contains two stream crossings.

Site Location: Project is located in Toboyne Township in Perry County.

Enclosed is a copy of the Notice of Intent (NOI) application for an ESCGP-3, General Information Form (GIF) for the Wetlands and Waterways permit application, and Location map of the proposed major modification route. Please submit any comments concerning this project within 30 days from date of receipt of this letter to:

Pennsylvania Department of Environmental Protection (PA DEP)
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110-8200
Phone: (717) 705-4700

Should you have questions regarding this correspondence, please do not hesitate to contact me at 412.921.8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
E&S Task Manager

RFS/clm

Enclosure: Site Location Maps; Notice of Intent; GIF

cc: File 212IC-BF-00037

Tetra Tech
661 Andersen Drive, Suite 200, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

February 27,2019

Dear Customer:

The following is the proof-of-delivery for tracking number **774567107425**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	K.ADKINS	**Delivery location:**	25 W MAIN ST VET MEM BLDG NEW BLOOMFIELD, PA 17068
Service type:	FedEx Priority Overnight	**Delivery date:**	Feb 27, 2019 11:57
Special Handling:	Deliver Weekday Adult Signature Required		

Shipping Information:

Tracking number:	774567107425	**Ship date:**	Feb 26, 2019
		Weight:	0.5 lbs/0.2 kg

Recipient:
TO WHOM IT MAY CONCERN
PERRY COUNTY
25 WEST MAIN STREET
NEW BLOOMFIELD, PA 17068 US

Shipper:
ADMIN OFFICE
Tetra Tech, Inc.
Foster Plaza Building 7
661 Andersen Drive, Suite 200
Pittsburgh, PA 15220 US

Reference 212IC-BF-00037.500
Purchase order number: CARSON/MORRIS

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TETRA TECH

PITT-02-19-068

February 26, 2019

Project Number 212IC-BF-00037

Toboyne Township
50 Lower Buck Ridge Road
Blain, Pennsylvania 17006

Reference: Sunoco Pipeline, L.P. (SPLP)
Pennsylvania Pipeline Project
Major Modification-Horse Valley

To Whom It May Concern:

This municipal notice, under the requirements of Acts 14, 67, 68, and 127, is to inform you that our client, Sunoco Pipeline, L.P. (SPLP), is applying for coverage under the Erosion and Sediment Control General Permit (ESCGP-3) for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing or Treatment Operations or Transmission Facilities and for coverage under Chapter 105 Joint Permit for Water Obstruction and Encroachment.

Project Name: Pennsylvania Pipeline Project

Applicant Name: Sunoco Pipeline, L.P.
525 Fritztown Road
Sinking Spring, PA 19608

Project Description: Sunoco Pipeline, L.P. (SPLP) proposes a Major Modification to the Pennsylviana Pipeline Project within Toboyne Township, Perry County. The Major Modification consists of a change in the route and installation method for the 16-inch diameter pipeline from a Horizontal Directional Drill (HDD) to an open cut installation. The reroute will increase the limits-of-disturbance by 3.94 acres and contains two stream crossings.

Site Location: Project is located in Toboyne Township in Perry County.

Enclosed is a copy of the Notice of Intent (NOI) application for an ESCGP-3, General Information Form (GIF) for the Wetlands and Waterways permit application, and Location map of the proposed major modification route. Please submit any comments concerning this project within 30 days from date of receipt of this letter to:

Pennsylvania Department of Environmental Protection (PA DEP)
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110-8200
Phone: (717) 705-4700

Should you have questions regarding this correspondence, please do not hesitate to contact me at 412.921.8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
E&S Task Manager

RFS/clm

Enclosure: Site Location Maps; Notice of Intent; GIF

cc: File 212IC-BF-00037

Tetra Tech
661 Andersen Drive, Suite 200, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

February 27,2019

Dear Customer:

The following is the proof-of-delivery for tracking number **774567089640**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	D.BEASTON	**Delivery location:**	50 LOWER BUCK RIDGE ROAD BLAIN, PA 17006
Service type:	FedEx International Economy	**Delivery date:**	Feb 27, 2019 14:08
Special Handling:	Deliver Weekday Residential Delivery		

Shipping Information:

Tracking number:	774567089640	**Ship date:**	Feb 26, 2019
		Weight:	0.5 lbs/0.2 kg

Recipient:
TO WHOM IT MAY CONCERN
Toboyne Township
50 Lower Buck Ridge Road
BLAIN, PA 17006 US

Shipper:
ADMIN OFFICE
Tetra Tech, Inc.
Foster Plaza Building 7
661 Andersen Drive, Suite 200
Pittsburgh, PA 15220 US

Reference 212IC-BF-00037.500
Purchase order number: CARSON/MORRIS

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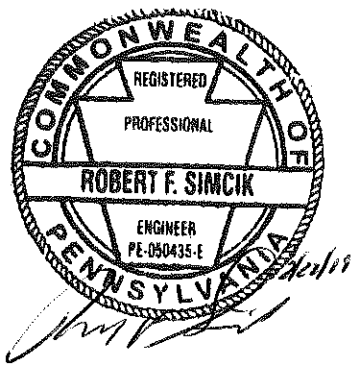
5. ACT 167 VERIFICATION REPORT

ACT 167 STORMWATER CONSISTENCY VERIFICATION REPORT

SUNOCO PENNSYLVANIA PIPELINE PROJECT

PERRY COUNTY, PENNSYLVANIA



ACT 167 STORMWATER CONSISTENCY VERIFICATION REPORT FOR PERRY COUNTY

1.0 INTRODUCTION

Tetra Tech, Inc. (Tt) has prepared this Act 167 Stormwater Consistency Verification Report. The report verifies consistency between the provisions of the Perry County Subdivision and Land Development Ordinance with Stormwater Management requirements and the Pennsylvania Pipeline Project. The pipeline will traverse through two townships in Perry County: Jackson and Toboyne. The Horse Valley Major Modification is located within Toboyne Township. The County of Perry developed the Subdivision and Land Development Ordinance in 2008 and added the Stormwater Management requirements mid-plan process. Perry County noted that their general Stormwater Management Ordinance is not in compliance with Act 167. Jackson and Toboyne Townships both follow the county Subdivision and Land Development Ordinance containing Stormwater Management requirements.

2.0 PROJECT DESCRIPTION

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project that would expand existing pipeline systems to provide natural gas liquid (NGL). The project involves the installation of approximately two parallel pipelines within a 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania (PA) to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255.8 miles. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system. The 20-inch pipeline will be installed first, followed by the 16-inch line. Any temporary stabilization required will be implemented in accordance with this Erosion and Sediment (E&S) Plan. Both pipelines will be installed within the same limit of disturbance (LOD) and in the same construction period. Construction activities will involve the installation of block valve pad, tree removal, clearing and grubbing within the right of way, trenching, pipe installation, and site restoration. The total limit of disturbance will be 126 acres in Perry County.

The Horse Valley Major Modification consist of a change in route and installation method of the 16-inch diameter pipeline previously permitted as the Horse Valley Horizontal Directional Drill (HDD) to an open cut installation. The change in methodology is a result of the encounter of an unconfined aquifer during the 20-inch pipe HDD under an Exceptional Value (EV) wetland/stream complex. SPLP has elected to abandon any future HDD attempts to install the 16-inch pipeline through this area and has sought an alternate route of installation agreeable to the landowners and that minimizes impacts to the aquifer. The reroute includes an additional 3.94 acres of LOD. This E&S plan specifically relates to impacts associated with the proposed Horse Valley Major Modification.

Fifty feet will be maintained as permanent ROW. In addition, temporary use areas or extra workspaces will be required at some stream and road/railroad crossings; these will typically expand the construction ROW by 25 feet where needed. Construction activities will involve the installation of, a block valve at an existing SPLPS pump station, tree removal, clearing and grubbing within the ROW, trenching, pipe installation, and site restoration.

In Perry County, Pennsylvania, the Pennsylvania Pipeline Project traverses 10.8 miles through the municipalities of Jackson and Toboyne and spans the Blain, Blairs Mills, Andersonburg, Newburg, and Newville USGS Quadrangles. A USGS location map showing the proposed alignment can be found in Attachment 1 of the E&S report. Past and present land use of the project area and surrounding area is agricultural and forested land. Future land use will be a maintained vegetated natural gas pipeline ROW and agricultural land.

The project area surface water runoff drains to surface waters and unnamed tributaries (UNTs) designated as high quality (HQ), cold water fisheries (CWF), and exceptional value (EV) under PA Code 25 Chapter 93 including Horse Valley Run (HQ-CWF), UNT to Horse Valley Run (HQ-CWF), Schaeffer Run (HQ-CWF), UNT to Schaeffer Run (HQ-CWF), Shermans Creek (HQ-CWF), UNT to Shermans Creek (HQ-CWF), South Branch Laurel Run (HQ-CWF), UNT to South Branch Laurel Run (HQ-CWF), UNT to Laurel Run (HQ-CWF), UNT to Shultz Creek (HQ-CWF), Shultz Creek (HQ-CWF), Laurel Run (EV), and Bull Run (HQ-CWF). The Horse Valley Major Modification area surface water runoff drains to Horse Valley Run (HQ-CWF).

The E&S plan contains Antidegradation Best Available Combination of Technologies (ABACT) best management practices (BMPs) to maintain the designated use of the receiving waters. The basic BMPs that are anticipated to be employed during the construction activities include:

- Minimizing disturbances to site areas, especially those currently covered with pavement or vegetation.
- Minimizing the time that soil is exposed.
- Preventing the runoff from flowing across disturbed areas (divert the flow to vegetated areas).
- Stabilizing disturbed soils as soon as possible.
- Slowing down the runoff flowing across the site.
- Removing sediment from surface water runoff before it leaves the site.

3.0 SITE RESTORATION

Following completion of pipeline installation and trench backfilling, the area shall be returned to the general grade present prior to pipeline installation in order to maintain preconstruction drainage patterns. After completion of major construction work, topsoil that was stockpiled during construction will be placed along the ROW. Grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, or if specified, sodded, unless occupied by structures, paved or designated as a permanent gravel pad. Disturbed areas, which are at final grade, shall be seeded and mulched as soon as practical. The permanent seed mixture will restore disturbed areas to a meadow in good condition or better.

The Major Modification LOD will maintain pre-construction drainage pattern and be restored to meadow in good condition or better. Within Perry County, all disturbed areas within the pipeline right of way, additional temporary workspaces, and temporary access roads will be restored to a meadow in good condition or better. The pre-construction drainage patterns surrounding the project will be maintained for the areas of the project within the township. As a result of restoring the pipeline right of way, additional temporary workspaces, and temporary access roads to a meadow condition and maintaining pre-construction drainage patterns in accordance with 25 Pa Code § 102.8(n), there will be no increase in stormwater runoff rate or volume attributed to these locations, and a quantitative stormwater analysis is not required for the pipeline ROW. Where an existing lawn condition exists and the property owner specifies, the area will be restored to a lawn condition instead of meadow.

4.0 STORMWATER MANAGEMENT

The construction and restoration practices for the proposed major modification have been designed to meet the provisions PADEP Chapter 102 regulations. In general, the pre-construction drainage patterns surrounding the project will be maintained, and all disturbed areas within the pipeline ROW will be restored to a meadow in good condition. As a result of restoring all disturbed areas within the pipeline ROW to a meadow condition, the project will not result in increased stormwater runoff rate or volume.

5.0 ACT 167 COMPLIANCE

For the proposed major modification, the pre-construction drainage patterns surrounding the project will be maintained, the LOD will be minimized to the extent practicable, and all disturbed areas will be restored to a meadow in good condition. Stormwater management best management practices will be used to ensure that the post-development runoff volume and post-development peak discharge rates do not increase. The channel protection standards have been achieved by eliminating the increase in the post-development runoff volume. The water quality standards have been met by minimizing disturbance, maintaining trees and woodlands where possible, maintaining pre-construction drainage patterns to the extent practicable, minimizing soil disturbance and replacing topsoil. Perry County does not have a county-wide Act 167 plan adopted. By following the requirements of PADEP's 25 Pa Code § 102.8(n), the Sunoco Pipeline project meets the criteria for Perry County.

6. PNDI

1. PROJECT INFORMATION

Project Name: **Horse Valley 16" Open Cut Route**
Date of Review: **2/12/2019 09:32:07 AM**
Project Category: **Energy Storage, Production, and Transfer, Energy Transfer, Pipeline (e.g., gas, oil) -- NEW (construction of new line in a new location)**
Project Area: **5.70 acres**
County(s): **Perry**
Township/Municipality(s): **TOBOYNE**
ZIP Code: **17071**
Quadrangle Name(s): **BLAIRS MILLS**
Watersheds HUC 8: **Lower Juniata**
Watersheds HUC 12: **Horse Valley Run**
Decimal Degrees: **40.294723, -77.650219**
Degrees Minutes Seconds: **40° 17' 41.28" N, 77° 39' 0.7881" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Conservation Measure**	**No Further Review Required, See Agency Comments**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

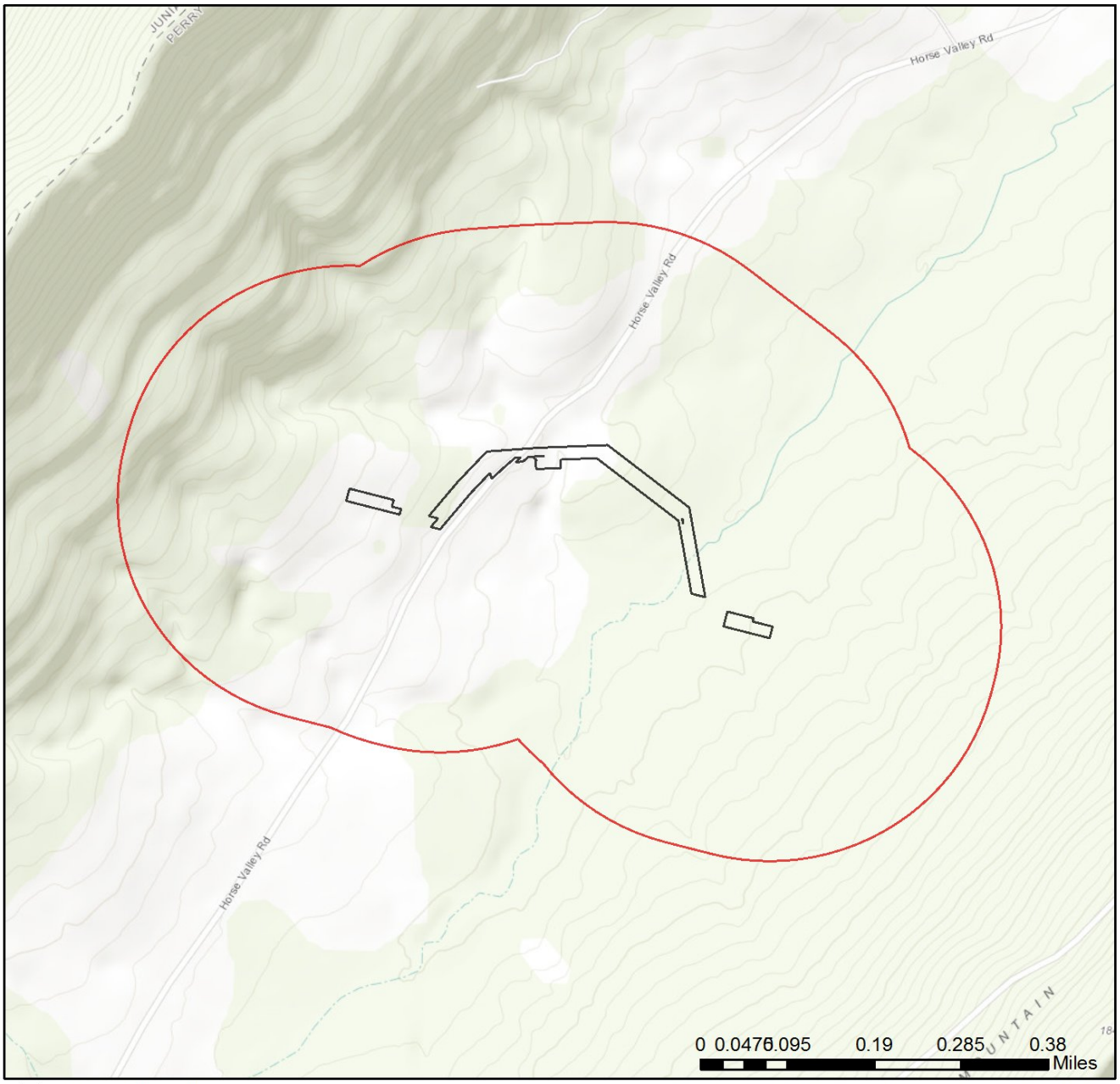
Horse Valley 16" Open Cut Route

Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

Horse Valley 16" Open Cut Route



Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

RESPONSE TO QUESTION(S) ASKED

Q1: Which of the following accurately describes the habitats on and within 650 feet of the project area? "Project area" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.).
Your answer is: The project area has not been field investigated to identify and delineate large rocks or boulders, talus or scree, rock outcrops, boulder fields, quarries, caves and associated passages, cliffs, abandoned highwalls from previous surface mining, and abandoned deep mines - OR - it is currently unknown if the project will affect any of these habitats.

Q2: The proposed project is in the range of the Indiana bat. Describe how the project will affect bat habitat (forests, woodlots and trees) and indicate what measures will be taken in consideration of this. Round acreages up to the nearest acre (e.g., 0.2 acres = 1 acre).
Your answer is: The project will affect 1 to 39 acres of forests, woodlots and trees.

Q3: Is tree removal, tree cutting or forest clearing of 40 acres or more necessary to implement all aspects of this project?
Your answer is: No

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PGC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Neotoma magister	Allegheny Woodrat	Threatened

PA Department of Conservation and Natural Resources
RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE:

Conservation Measure: Projects conducted in the occupied range of the timber rattlesnake (*Crotalus horridus*) have a high risk of encountering this species during construction.
1) Workers responsible for implementing this project should be advised that timber rattlesnakes may be encountered and that avoidance is the best means of minimizing risks to personal safety. It is suggested that safety protocols be implemented for timber rattlesnake encounters and workers should be advised that the timber rattlesnake is a state protected species and is not to be harmed. Killing of timber rattlesnakes is prohibited by the Commission pursuant to 58 Pa. Code Section 79.6.
2) We recommend that a timber rattlesnake habitat assessment be conducted in the project area by a qualified timber rattlesnake surveyor in order to assist project planners in avoiding disturbance of critical habitat. A list of qualified surveyors and habitat assessment protocol can be found here.
• See http://www.fishandboat.com/Resource/AmphibiansandReptiles/Pages/TimberRattlesnakeConservation.aspx for a list of Qualified Timber Rattlesnake Surveyors
• See http://www.fishandboat.com/Resource/AmphibiansandReptiles/Pages/TimberRattlesnakeConservation.aspx for the Timber Rattlesnake Habitat Protocol
3) If potential den (over-wintering) habitat is located during the habitat assessment, we recommend that the project be modified to avoid direct impacts to this irreplaceable habitat, or a Timber Rattlesnake Presence-Absence Survey of potential den (over-wintering) habitat be conducted in the habitats that are currently slated for direct disturbance to determine the presence or absence of rattlesnake hibernacula in the project area. Survey reports should be sent to PFBC for review and consultation. This information is necessary to allow PFBC to formulate recommendations to avoid adverse impacts to this species of special concern.
• See http://www.fishandboat.com/Resource/AmphibiansandReptiles/Pages/TimberRattlesnakeConservation.aspx for the Timber Rattlesnake Presence-Absence Survey Protocol
4) If potential or occupied gestation habitat is located during the habitat assessment and cannot be avoided by the proposed development, we recommend that this habitat be replaced using our habitat creation guidelines.
• See http://www.fishandboat.com/Resource/AmphibiansandReptiles/Pages/TimberRattlesnakeConservation.aspx for the PFBC Gestation Habitat Creation Guidelines
5) Tree clearing and timbering within potential timber rattlesnake critical habitats (135°-275° aspect, >10% slope) should be conducted from October 16 to April 14 in order to avoid encounters with timber rattlesnakes.
6) For the safety of workers and snakes, the Commission recommends that a PFBC permitted timber rattlesnake biologist who has the proper skills to handle this venomous species be on-site prior to and during construction, between April 15 and October 15, to inspect and clear the area (including staging areas and access roads) of timber rattlesnakes and to capture and remove any rattlesnakes that may interfere with work activities.
See http://www.fishandboat.com/Resource/AmphibiansandReptiles/Pages/TimberRattlesnakeConservation.aspx for the Monitoring Guidelines
7) If concerns arise during construction over high numbers of snake encounters or habitat alteration, please contact the PFBC at 814-359-5237 for consultation with our biologists.

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Special Concern Species*

U.S. Fish and Wildlife Service

RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
***Note:** U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Kevin Berend
Company/Business Name: Tetra Tech
Address: 301 Ellicott St.
City, State, Zip: Buffalo
Phone: (716) 849-9419 Fax: (716) 849-9420
Email: kevin.berend@tetratech.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

2/12/19
date

7. POST-CONSTRUCTION STORMWATER MANAGEMENT AND SITE RESTORATION PLAN

Site Restoration and Post-Construction Stormwater Management Plan

Pennsylvania Pipeline Project - South Central Region: Spreads 3, 4, 5

Major Modification-Horse Valley

February 2019

Prepared for:
Sunoco Logistics, L.P.
525 Fritztown Road
Sinking Spring, PA 19608

Prepared by:
Tetra Tech, Inc.
661 Andersen Drive
Pittsburgh, PA 15220

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ROBERT F. SIMCIK
ENGINEER
PE-050435-E
2/22/19

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1 USGS Location Map

2 Soils Map, Soil Descriptions, Geologic Formations Map, Sinkhole Repair Plan

3 Construction Details

4 Stormwater Calculations

5 Infiltration Test Reports

6 PCSM Plan Drawings

7 Geosystems Correspondence

LIST OF ACRONYMS

ACRONYM	MEANING
ABACT	Antidegradation Best Available Combination of Technologies
BMP	Best Management Practice
E&SC	Erosion and Sediment Control
HDD	Horizontal directional drilling
HDPE	High-density polyethylene
HQ	High quality
NGL	Natural gas liquids
PADEP	Pennsylvania Department of Environmental Protection
PASDA	Pennsylvania Spatial Data Access
PCSM	Post-Construction Stormwater Management
ROW	Right of way
SR	Site Restoration
TSF	Trout stock fisheries
Tt	Tetra Tech, Inc.
UNT	Unnamed tributary
WWF	Warm water fisheries

1.0 INTRODUCTION

Tetra Tech, Inc. (Tt) has prepared this Site Restoration and Post-Construction Stormwater Management (PCSM) Plan (Plan) for Sunoco Pipeline, L.P. (SPLP) – Pennsylvania Pipeline Project, South Central Region: Spreads 3, 4, and 5. The plan addresses activities associated with a major modification to the Sunoco Pennsylvania Pipeline Project (SPPP) installation. Spreads 3, 4, and 5 (South Central Region) of this project are located in Blair, Huntingdon, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, and Berks Counties, Pennsylvania (PA). The proposed modification is located in Toboyne Township, Perry County, PA. A site location map is provided in Attachment 1. This Site Restoration and Post Construction Stormwater sections specifically relates to impacts associated with the proposed Major Modification.

2.0 SITE DESCRIPTION

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project that would expand existing pipeline systems to provide natural gas liquid (NGL). The project involves the installation of approximately two parallel pipelines within a 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania (PA) to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255.8 miles. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system. The 20-inch pipeline will be installed first, followed by the 16-inch line. Both pipelines will be installed within the same limit of disturbance (LOD) and in the same construction period. This Plan specifically relates to impacts associated with the South Central Region, Construction Spreads 3, 4, and 5.

Fifty feet will be maintained as permanent ROW. In addition, temporary use areas or extra workspaces will be required at some stream and road/railroad crossings; these will typically expand the construction ROW by 25 feet where needed. Construction activities will involve tree removal, clearing and grubbing within the ROW, trenching, pipe installation, and site restoration. The total LOD in the South Central Region will be approximately 1,754 acres. Acres disturbed by county will be as follows: Blair County with 254 acres disturbed, Huntingdon County with 278 acres disturbed, Juniata County with 35 acres disturbed, Perry County with 127 acres disturbed, Cumberland County with 314 acres disturbed, York County with 69 acres disturbed, Dauphin County with 131 acres disturbed, Lebanon County with 223 acres disturbed, Lancaster County with 75 acres disturbed, and Berks County with 248 acres disturbed.

The Horse Valley Major Modification consist of a change in route and installation method of the 16-inch diameter pipeline previously permitted as the Horse Valley Horizontal Directional Drill (HDD) to an open cut installation. The change in methodology is a result of the encounter of an unconfined aquifer during the 20-inch pipe HDD under an Exceptional Value (EV) wetland/stream complex. SPLP has elected to abandon any future HDD attempts to install the 16-inch pipeline through this area and has sought an alternate route of installation agreeable to the landowners and that minimizes impacts to the aquifer. The reroute includes an additional 3.94 acres of LOD. This E&S plan specifically relates to impacts associated with the proposed Horse Valley Major Modification.

Past and present land use of the project area and surrounding area is agricultural and forested land. Future land use will be a maintained vegetated natural gas pipeline ROW and agricultural land and forested land. Relevant topographic features including streams, streets, pipelines, structures, utility lines, fences, paving and other significant items along the gas line alignment are indicated on the plans, where applicable.

2.1 TOPOGRAPHY

The work zone is located on ground of varying elevations. Site elevations vary from 285 feet (Susquehanna River) to 2,251 feet (approximately 8,250 feet along centerline from the western border of Blair County) above mean sea level based on the Pennsylvania Spatial Data Access (PASDA). The construction plans show the topography of the site and the surrounding area.

2.2 GEOLOGY AND SOILS

The soils and geologic formations surrounding the site are shown on the figures provided in Attachment 2. Attachment 2 also provides soil descriptions and properties of the soils found at the site. In general, the following actions will be taken to counteract soil limitations:

1. Erodible Soils - Prompt stabilization practices will be implemented to minimize the risk of erosion. PCSM facilities have been designed to minimize point-source discharges which increase the likelihood of downstream erosion.

2. Cut Banks Caves - Almost all Pennsylvania soils are susceptible to caving of cut banks. Cut slopes will be stabilized as soon as possible with seed and mulch to prevent sliding. Slopes are designed to not exceed 2H:1V.

3. Corrosive to Concrete or Steel Pipe - Pipes to be used on site shall be either HDPE or coated steel.

4. High Water Table - A seasonal high groundwater determination was conducted at the proposed block valve sites. PCSM facilities that infiltrate have been designed to maintain a 20" separation from the seasonal high groundwater table.

5. Low Strength - Most of Pennsylvania soils (73%) have relatively low strength. Precautions will be taken to prevent slope failures due to improper construction practices. Soils will be evaluated during construction of block valve sites and PCSM facilities to determine whether additional measures will need to be taken.

6. Piping Tendencies -Piping is the erosion by percolating waters or seepage in layer of subsoil resulting in caving and the formation of tunnels or pipes thorough which the soluble or granular material is removed. Where necessary, anti-seep collars will be used to prevent piping.

7. Poor Topsoil -Soil amendments will be added to site soils to promote vegetative growth.

8. Potentially Hydric -A wetland delineation has been performed to determine the presence of wetlands.

9. Potential Sinkhole - Should a sinkhole be encountered during construction, repair should be done under the direct observation and supervision of a professional geologist or licensed geotechnical engineer. Site specific sinkhole repairs should be developed on a case by case basis. Block valves located within karst

topography have been identified, and infiltration practices have been designed to minimize the risk of sinkholes.

To prevent sediment from leaving the site, stabilization practices will be implemented in disturbed areas as soon as practical. Geologic formations or soil conditions that may have the potential to cause pollution after earth disturbance were not observed during field activities. Infiltration tests were performed and results evaluated for the design of the proposed post construction stormwater BMP's.

2.3 SURFACE WATER HYDROLOGY

The receiving water for the Horse Valley Major Modification LOD are UNT to Horse Valley Run and UNT to Horse Valley Run, which are both designated as HQ-CWF in Pa. Code 25 Chapter 93. Descriptions of the Primary Receiving Waters can be found in Table 1.

The plan contains Antidegradation Best Available Combination of Technologies (ABACT) BMPs to maintain the designated use of the receiving waters and prevent additional siltation from polluting the streams. The locations of the receiving waters relative to the project area can be seen on the USGS location map in Attachment 1.

3.0 SITE RESTORATION PRACTICES

Section 3.0 addresses restoration of the mainline pipeline, temporary workspaces, temporary access roads, and vegetated block valve sites. Following completion of pipeline installation and trench backfilling, the pipeline right of way, associated workspaces, and temporary access roads shall be returned to the general grade present prior to pipeline installation in order to maintain preconstruction drainage patterns. After completion of major construction work, topsoil that was stockpiled during construction will be placed along the ROW. Grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, or if specified, sodded, unless occupied by structures, paved or designated as a permanent access road. Disturbed areas, which are at final grade, shall be seeded and mulched once final grades are achieved. The permanent seed mixture will restore disturbed areas to a meadow in good condition or better. If seeding cannot be completed within a four (4) day period due to weather conditions, the disturbed area will be mulched with straw at the rate of three (3) tons per acre. This straw will be anchored using a method described in Section 3.4.

3.1 BMP DESCRIPTION AND CONSTRUCTION SEQUENCE

A generalized construction sequence is provided below. The construction sequence is intended to provide a general course of action to conform to the applicable regulatory agency requirements for site restoration and post-construction stormwater management of the site. Necessary steps for proper and complete execution of work pertaining to this plan, whether specifically mentioned or not, are to be performed by the contractor. The contractor will comply with all requirements listed in this section. The contractor may be required to alter controls based on the effectiveness of controls or differing conditions encountered in the field. The appropriate county conservation district and DEP shall be contacted and must approve any deviation to the authorized plans.

A pre-construction meeting is required prior to the start of any construction activity. The Pennsylvania Department of Environmental Protection (PADEP) or applicable county conservation district, contractors, the landowner, appropriate municipal officials, and the plan preparer must be invited to this meeting at least 7 days in advance.

General Construction Sequence

1. Grade surface to finished grade elevations as soon as practicable following completion of pipe installation.

2. Surface roughening will be utilized to rough the soil surface with horizontal depressions for the purpose of reducing runoff velocity, increasing infiltration, aiding the establishment of vegetation, and reducing erosion. Surface roughening should be applied to slopes 3H:1V or steeper unless a stable rock face is provided or it can be shown that there is not a potential for sediment pollution to surface waters. For roughened surfaces within 50 feet of a surface water, and where blanketing of seeded areas is proposed as the means to

achieving permanent stabilization, spray-on type blankets are recommended. Surface roughening shall be accomplished using dozers affixed with grouser tracked equipment. Dozers shall run up and down the slopes leaving horizontal grooves perpendicular to the slope. Dozer blades shall be raised and not used during surface roughening. Where compaction does occur, contractor shall scarify the soil or provide additional roughening such as deep ripping or chisel ripping to restore the area to a minimal compacted state. In areas of proposed infiltration, soils shall be amended to 2' below grade. See Soil Amendment and Restoration construction sequence below.

3. Place topsoil from topsoil stockpiles as the upper layer of backfill. Topsoil shall not be placed when the subgrade is frozen or when it is excessively wet or dry and shall not be handled when in a frozen or muddy condition.

4. Remove gravel and geotextile from the temporary access roads and scarify the soil. Refer to step 2 of this sequence to address compaction at access roads. After addressing compaction concerns, place topsoil that was stripped prior to installation of the access roads.

5. Immediately seed and mulch disturbed areas in accordance with the permanent seeding schedule once final grade is established and topsoil is placed.

6. Maintain erosion and sedimentation control devices until site work is complete and a uniform 70-percent perennial vegetative cover is established. Regrade and revegetate areas disturbed during the removal of the erosion and sediment controls.

Permanent Seeding

Site preparation and establishment of permanent cover in areas other than lawns will be conducted according to the following guidelines:

SITE CONDITIONS	NURSE CROP	SEED MIXTURE (SELECT ONE MIXTURE)
SLOPES AND BANKS (NOT MOWED)		
WELL-DRAINED	1 PLUS	3, 5, 8, OR 12 (1)
VARIABLE DRAINAGE	1 PLUS	3 OR 7
SLOPES AND BANKS (MOWED)	1 PLUS	2 OR 10
WELL-DRAINED		
SLOPES AND BANKS (GRAZED/HAY)	1 PLUS	2,3, OR 13
WELL-DRAINED		
GULLIES AND ERODED AREAS	1 PLUS	3, 5, 7, OR 12 (1)
EROSION CONTROL FACILITIES (BMPS)		
SOD WATERWAYS, SPILLWAYS, FREQUENT WATER FLOW AREAS	1 PLUS	2, 3, OR 4
DRAINAGE DITCHES		
SHALLOW, LESS THAN THREE FEET DEEP	1 PLUS	2, 3, OR 4
DEEP, NOT MOWED	1 PLUS	5 OR 7

SITE CONDITIONS	NURSE CROP	SEED MIXTURE (SELECT ONE MIXTURE)
POND BANKS, DIKES, LEVEES, DAMS, DIVERSION CHANNELS, AND OCCASIONAL WATER FLOW AREAS		
MOWED AREAS	1 PLUS	2 OR 3
NON-MOWED AREAS	1 PLUS	5 OR 7
FOR HAY OR SILAGE ON DIVERSION CHANNELS AND OCCASIONAL WATER FLOW AREAS	1 PLUS	3 OR 13
HIGHWAYS		
NON-MOWED AREAS		
WELL-DRAINED	1 PLUS	5, 7, 8, OR 10
VARIABLE DRAINED	1 PLUS	3 OR 7
POORLY DRAINED	1 PLUS	3
AREAS MOWED SEVERAL TIMES PER YEAR	1 PLUS	2, 3, OR 10
UTILITY ROW		
WELL-DRAINED	1 PLUS	5, 8, OR 12 (1)
VARIABLE DRAINED	1 PLUS	3 OR 7
WELL-DRAINED AREAS FOR GRAZING/HAY	1 PLUS	2, 3, OR 13
EFFLUENT DISPOSAL AREAS	1 PLUS	3 OR 4
SANITARY LANDFILLS	1 PLUS	3, 5, 7, 11 (1), OR 12 (1)
SURFACE MINES		
SPOILS, MINE WASTES, FLY ASH, SLAG, SETTLING BASIN RESIDUES AND OTHER SEVERELY DISTURBED AREAS (LIME TO SOIL TEST)	1 PLUS	3, 4, 5, 7, 8, 11 (1) OR 12(1)
SEVERELY DISTURBED AREAS FOR GRAZING/HAY	1 PLUS	3 OR 13
LAWN	1 PLUS	PENNDOT Formula B

RECOMMENDED SEED MIXTURES			
MIXTURE NO.	**SPECIES**	**SEEDING RATES – PLS (1)**	
		MOST SITES	ADVERSE SITES (8)
1 (2)	spring oats (spring), or 64 96	64	96
	annual ryegrass (spring or fall), or	10	15
	winter wheat (fall), or	90	120
	winter rye (fall)	56	112
2 (3)	tall fescue, or 75	60	75
	fine fescue, or 40	35	40
	kentucky bluegrass, plus 25 30	25	30
	redtop(4), or	3	3
	perennial ryegrass	15	20
3	birdsfoot trefoil, plus 6 10	6	10
	tall fescue	30	35
4	birdsfoot trefoil, plus	6	10
	reed canarygrass	10	15
5 (5)	Big Bluestem, plus	10	15
	tall fescue, or	20	25
	perennial ryegrass	20	25
6 (5,6)	Big Bluestem, plus	10	15
	annual ryegrass	20	25
7 (5)	birdsfoot trefoil, plus	20	30
	Big Bluestem, plus	20	30
	tall fescue	20	25

RECOMMENDED SEED MIXTURES			
MIXTURE NO.	**SPECIES**	**SEEDING RATES – PLS (1)**	
		MOST SITES	ADVERSE SITES (8)
8	flatpea, plus	20	30
	tall fescue, or	20	30
	perennial ryegrass	20	25
9	Not applicable to project	N/A	N/A
10	tall fescue, plus	40	60
	fine fescue	10	15
11	deertongue, plus	15	20
	birdsfoot trefoil	6	10
12(7)	switchgrass, or	15	20
	big bluestem, plus	15	20
	birdsfoot trefoil	6	10
13	orchardgrass, or	20	30
	smooth bromegrass, plus	25	35
	birdsfoot trefoil	6	10

1. Pure live seed (pls) is the product of the percentage of pure seed times percentage germination divided by 100. For example, to secure the actual planting rate for switchgrass, divide 12 pounds pls shown on the seed tag. Thus, if the pls content of a given seed lot is 35 percent, divide 12 pls by 0.35 to obtain 34.3 pounds of seed required to plant one-acre. All mixtures in this table are shown in terms of pls.

2. If high-quality seed is used, for most sites seed spring oats at a rate of two bushels per acre, winter wheat at 11.5 bushels per acre, and winter rye at one bushel per acre. If germination is below 90 percent, increase these suggested seeding rates by 0.5 bushel per acre.

3. This mixture is suitable for frequent mowing. Do not cut shorter than 4 inches.

4. Keep seeding rate to that recommended in table. These species have many seeds per pound and are very competitive. To seed small quantities of small seeds such as weeping lovegrass and redtop, dilute with dry sawdust, sand, rice hulls, buckwheat hulls, etc.

5. Note not applicable because the project does not propose the use of Crownvetch.

6. Use for highway slopes and similar sites where the desired species after establishment is Big Bluestem.

7. Do not mow shorter than 9 to 10 inches.

8. If liming, fertilization, and preparation of seedbed are properly done and if care is taken to drill and cover the seed (or mulch applied), the rate for “most sites” should suffice. However, on eroded or coarse and poorly prepared seedbeds, particularly if the soil is very acidic or infertile, the rate for “adverse sites” should be used.

9. For seed mixtures 11 and 12, only use spring oats or weeping lovegrass (included in mix) as nurse crop.

In lawn areas, permanent cover will be established using the following PENNDOT seed mixture:

PENNDOT FORMULA B				
Seeding Rate	3 lbs. per 1,000 square feet			
Species	**% by Weight**	**Purity %**	**Minimum % Germination**	**Maximum % Weed Seed**
Kentucky Bluegrass	50	98	80	0.20
Perennial Rye	20	98	90	0.15
Red Fescue	30	98	85	0.15

Liming Rates

Minimum 6 tons per acre at 100% effective neutralizing value (% ENV), unless the soil test determines that a lesser amount is needed. To determine the actual amount of regular lime to apply, divide the amount called for by the soil test by the % ENV for the product used. For example, if 6 tons per acre is needed and the ENV for the lime used is 88%, divide 6 by 0.88 resulting in 6.8 tons needing to be applied. For dolomitic lime, which has a significant amount of magnesium in it, divide the amount called for by the soil test by the % calcium carbonate equivalent (% CCE) listed for the product instead of the % ENV. The % CCE may be above 100% which accounts for the fact that magnesium has a greater effect per pound than the calcium in regular lime. Note: When a soil test requires more than 8,000 pounds of lime per acre, the lime must be mixed into the top 6 inches of soil.

Fertilization Rates

Apply 10-20-20 at 600 pounds/acre, if top dressed or 1,000 pounds/ac, if incorporated, unless the soil test determines that the rate can be less than these minimums.

SOIL AMENDMENT APPLICATION RATE EQUIVALENTS				
Soil Amendment	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yds.	
AGRICULTURAL LIME	6 TONS	240 LBS.	240 LBS.	or as per soil test; may not be required in agricultural fields
10-20-20 FERTILIZER	1,000 LBS.	25 LBS.	25 LBS.	or as per soil test; may not be required in agricultural fields

Temporary Seeding

Temporary grass cover will be established where soil stockpiles are exposed for a period greater than 4 days. The seed mixture for temporary cover will consist of 100% annual ryegrass. Seed will be applied at the rate of 40 pounds per acre or as recommended by a local recognized seed supplier approved by the Owner's representative. Prior to seeding, apply 1 ton of agricultural grade limestone per acre plus 10-10-10 fertilizer at the rate of 500 pounds per acre and work into the soil.

Mulching

The purpose of mulch is to reduce runoff and erosion, prevent surface compaction or crusting, conserve moisture, aid in establishing plant cover, and control weeds. Mulch will be applied on any area subject to erosion or that has unfavorable conditions for plant establishment and growth. The practice may be used alone or in conjunction with other structural and vegetative conservation practices such as waterways, ponds, sedimentation traps, or critical area planting. On sediment-producing areas where the period of exposure is less than two (2) months, mulch materials will be applied according to the following guidelines:

1. Straw mulch will be applied at the rate of 3 tons per acre. Chemically treated or salted straw is not acceptable as mulch.

2. Straw mulch will be anchored immediately after application by at least one of the following methods:

   A. "Crimped" into the soil using tractor-drawn equipment (straight-bladed coulter or similar).

      This method is limited to slopes no steeper than 3:1. Machinery should be operated on the contour. (Crimping of hay or straw by running it over with tracked machinery is not recommended.)

   B. Asphalt, either emulsified or cut-back, containing no solvents or other diluting agents toxic to plant or animal life, uniformly applied at the rate of 31 gallons per 1,000 square feet.

C. Synthetic binders (chemical binders) may be used as recommended by the manufacturer to anchor mulch provided that sufficient documentation is provided to show that it is non-toxic to native plant and animal species.

D. Lightweight plastic, fiber, or paper nets may be stapled over the mulch according to the manufacturer's recommendations.

Mulched areas will be checked periodically and after each runoff event (e.g., rain, snowmelt, etc) for damage until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie-down material will be repaired upon discovery.

3.2 MATERIAL RECYCLING AND DISPOSAL

The operator will remove from the site, recycle, or dispose of all building materials and wastes in accordance with PADEP's solid waste management regulations at 25 Pennsylvania Code 260.1 et seq., 271.1 et seq., and 287.1 et seq. The contractor will not illegally bury, dump, or discharge building material or wastes at the site. Excess material brought into the site areas to facilitate construction access will be completely removed prior to rough grading and final surface stabilization. Expected construction wastes during site restoration will consist of packaging material and sediment cleaned from E&SC BMPs. Packaging from materials brought on site will be disposed of by a licensed hauler. Sediment removed from BMPs will either be spread in a protected area to dry and then recycled as fill material prior to permanent seeding or disposed of off-site. In cases where disposal is necessary, waste materials will be disposed of at an approved PADEP waste site.

3.3 THERMAL IMPACTS

Thermal impacts are most commonly associated with urbanization (i.e., increased impervious surfaces) that results in heated stormwater runoff flowing into receiving waters where it mixes, and potentially increases the base temperature of the surface water in streams. However, another contributing factor for stream temperature is solar exposure (radiant energy input) to the surface water, typically ponded, standing waters. The amount of heat transferred, and the degree of thermal pollution is of importance for fisheries management and the ecological integrity of receiving waters. Among the attributes that determine the contribution of solar energy to thermal impacts are the presence of riparian vegetation, as well as stream width, depth, flow regime (perennial, intermittent, ephemeral), and orientation.

Thermal impacts have been minimized by limiting the disturbed area to the maximum extent practicable. By minimizing the extent of the disturbed area, vegetative clearing, including forested areas, has been minimized. Vegetated block valve sites will be restored to a meadow in good condition or better, and no impervious surface will be created at those sites. Following installation of the pipelines, existing grades along the pipeline right of way, additional temporary workspaces, and temporary access roads will be restored, permanent seeding will

occur as soon as practicable to facilitate vegetative growth during germinating months, and the addition/creation of impervious surfaces in riparian areas has been avoided. By returning these areas to their existing grades, stormwater is unlikely to pond in these locations therefore minimizing the potential for ponded water to result in significant contributions to thermal impacts in receiving waters. In addition, thermal impacts will be minimized during site restoration by facilitating permanent seeding as soon as practicable to encourage vegetative growth. Although shade cover will be reduced in areas that were previously forested, there is no anticipated adverse effect to the receiving watersheds because the project will only clear a narrow corridor of vegetation within each respective watershed. The Project does not have thermal impacts. Specifically, thermal impacts will be avoided by implementing the following:

- Siting parallel to and overlapping with existing ROWs to minimize vegetation clearing at stream crossings;
- Reducing the construction ROW width and additional temporary workspaces at stream crossings;
- No grubbing, grading, or clearing of trees will occur within 50 feet of the top of stream bank until pipeline construction/installation is ready to proceed through that area.
- Restoring (seeding) disturbed areas/ROW as soon as practicable and /or directing runoff to vegetated areas to reduce the temperature of runoff prior to discharge into the streams; and,
- Restoring the stream banks and seeding/planting as soon as practicable to facilitate vegetative growth along the stream channel.

3.4 RIPARIAN FOREST BUFFERS

A separate waiver request has been prepared and is provided as Attachment 6 to the NOI application. The following summarizes that request. The Pennsylvania Pipeline Project qualifies for an exemption of the riparian forest buffer requirement under Chapter 102.14(d)(1)(ix) for areas within the Chapter 105 permit area. Existing riparian forest buffers within the project area are identified on the E&S plan drawings in Attachment 2 of the E&S Plan.

In addition to the exemption, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

Demonstration of Waiver Necessity

A riparian forest buffer waiver is necessary to complete the intended scope of the pipeline project. The project is from Houston to Delmont, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. The project crosses through Blair County for approximately 23.5 miles, Huntingdon County for approximately 26.2 miles, Juniata County for approximately 3.0 miles, Perry County for approximately 10.4 miles Cumberland County for approximately 33.1 miles, York County for approximately 6.5 miles, Dauphin County for approximately 11.5 miles, Lebanon County for approximately 19.7 miles, Lancaster County for approximately

7.5 miles, and Berks County for approximately 20.4 miles. Due to the linear nature of the project and the surrounding topography, riparian forest buffers could not be avoided altogether.

Alternatives Analysis

Impacts to environmental resources, including riparian forest buffers, were evaluated during the pipeline routing phase of the project. Field teams were deployed to evaluate alternate routes based on environmental and constructability constraints. The final route that was selected minimizes environmental impacts to the maximum extent practicable while still maintaining the project's overall constructability and ensuring a safe working environment while also taking landowner constraints into consideration. Additionally, several variations of horizontal direction drill profiles were evaluated to minimize pullback areas, additional workspaces, and overall disturbance within riparian forest buffers. Permanent features, such as access roads and block valves, were evaluated to locate the features outside of the riparian forest buffer, where possible.

Demonstration of Minimizing Impacts

All disturbance activities, including those which impact riparian forest buffers, have been reduced to the maximum extent practicable. The LOD has been reduced to 50 feet wide at all stream crossings within the riparian forest buffer area where possible adjacent to the stream area required for crossing and construction. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian forest buffer, the LOD has been reduced to 50 feet wide within 10 feet of the stream banks to limit the proximity of the work areas as per the stream crossing detail from the PADEP manual. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control BMPs. In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian forest buffers where possible.

Meeting Requirements of Chapter 102

All other requirements of Chapter 102 to minimize impacts to riparian buffers are being met in the project's Erosion and Sediment Control Plan and Site Restoration/Post-Construction Stormwater Management Plans which have been designed in accordance with Chapter 102 and in HQ/EV watersheds to implement ABACT controls where non discharge alternatives do not exist. In accordance with Chapter 102, and E&S plan has been developed to minimize the sediment entering the buffer areas through the use of properly designed E&S bmp's such as, but not limited to, waterbars, compost filter sock, diversion berms,slope pipes and erosion control blanket. A site restoration plan is proposed to revegetate the buffer areas within the right of way. The post construction stormwater management plan has been designed to control runoff rate and volume at permanent above ground facilities through infiltration practices

3.5 INSPECTION AND MAINTENANCE PROCEDURES

Seeded areas will be inspected weekly and after each runoff event for bare spots, washouts, and healthy growth. Necessary repairs will be made immediately. Mulched areas will be checked periodically and after severe storms for damage until the desired purpose of the mulching is achieved. Damaged portions of the mulch or tie-down material will be repaired upon discovery.

All sedimentation control measures will remain in place until the disturbed areas are stabilized and a uniform 70-percent perennial vegetative cover is established. Any area not achieving a 70-percent vegetative cover will be reseeded and mulched within 24 hours of detection. If BMPs are found to be inoperative or ineffective during an inspection, PADEP should be contacted within 24 hours, followed by submission of a written noncompliance report to PADEP within 5 days of the initial contact.

Long-Term Maintenance

Long-term maintenance of the pipeline ROW will include periodic visual inspections for sufficient vegetative growth and cover. Insufficient vegetative cover is defined as any area not achieving a uniform 70-percent perennial vegetative cover. Bare spots and areas with insufficient vegetative cover will be reseeded and mulched within 24 hours of discovery. The right of way will be inspected for signs of erosion, especially on steep slopes. Corrective measures will be taken, as needed. If there is evidence of trench settling, the area will be regraded to maintain pre-construction drainage patterns, mulched, and seeded. A written report is required for each inspection and for each repair or maintenance activity, and the report should specify how to access the site. SPLP is responsible for maintaining the ROW under the provisions of this permit

3.6 ANTIDEGRADATION REQUIREMENTS

The Horse Valley Major Modification is located within HQ special protection watersheds. A combination of non-discharge alternatives and the use of ABACT BMPs on site will protect the water quality of the receiving waters, in accordance with 25 Code §102.8(h).

Non-discharge alternatives were evaluated to minimize accelerated erosion and sedimentation and achieve zero net change in runoff between the pre- and post-construction conditions. The non-discharge alternatives evaluated were the use of infiltration and maintaining pre-construction drainage patterns within the right of way, temporary additional workspaces, and temporary access roads. The permanent waterbars will not divert or diminish the amount of water within the watershed but are intended to manage runoff velocity and potential degradation related to sediment laden runoff into receiving waters. As such, the will be no change to pre-existing drainage patterns as the permanent water bars will continue to direct water to the same receiving waters while providing the protection required in the PADEP Manual regarding slopes. The non-discharge alternatives were incorporated wherever feasible by minimizing soil compaction, restoring the infiltration capacity of the soil prior to permanent seeding, and restoring the disturbed area back to its original grade and

cover condition for the mainline pipeline. To alleviate compaction, surface roughening techniques such as deep ripping or chisel ripping will restore compacted areas to a minimal compacted state prior to permanent stabilization. The extent of the disturbed area will be minimized, and the duration of disturbance will be minimized by stabilizing disturbed areas as soon as practicable. ABACT BMPs will be used on site to protect and maintain the existing water quality of receiving waters.

Due to the linear nature of this project, all of the siltation impaired and HQ/EV special protection watersheds received the same non discharge alternative evaluation and incorporation of ABACT site restoration BMPs throughout the pipeline.

There will not be an increase in stormwater runoff rate or volume to prevent the physical degradation of the receiving water, such as scour, and stream bank destabilization. Stormwater runoff volume is not increasing throughout post-construction, and any post-construction stormwater discharge is managed so that it will not degrade the physical, chemical or biological characteristics of the receiving stream.

Filtration through the existing vegetation and soil is an efficient way to remove suspended stormwater pollutants such as sediment, as the suspended particles are physically filtered from the stormwater as it flows through the vegetation and percolates into the soil.

The runoff will be managed so that it will not degrade the physical, chemical, or biological characteristics of the receiving streams.

ABACT site restoration BMPs will include the following:

- Pre-construction drainage pattern intact,
- Minimizing the disturbed area,
- No direct discharge to surface waters,
- Prompt site restoration,
- Proper vegetative cover techniques.

3.7 STORMWATER RUNOFF ANALYSIS

The pre-construction drainage patterns surrounding the project will be maintained. All disturbed areas within the Horse Valley Major Modification LOD will be restored to a meadow in good condition or lawn where required by landowners. As a result of restoring the pipeline ROW and associated workspaces associated with the Major Modification to a meadow in good condition and maintaining pre-construction drainage patterns, there will be no increase in stormwater runoff rate or volume attributed to those areas.

All disturbed areas within the pipeline right of way, additional temporary workspaces, and temporary access roads will be restored to a meadow in good condition or better. The pre-construction drainage patterns surrounding the project will be maintained within the pipeline right of way, additional temporary workspaces, and temporary access roads.

The proposed mainline pipeline will be restored in accordance with 102.8(n) and meet the requirements outlined in §§ 102.8(b), (c), (e), (f), (h), (i), (l), and (m).

In accordance with § 102.8(b), the following principles have been incorporated into the project design in accordance with the numbering in § 102.8(b): (1) The integrity of stream channels and the physical, biological, and chemical qualities of the receiving waters will remain unchanged. The site restoration principles will protect the existing and designated uses of the receiving waters. BMPs will be maintained until the site achieves stabilization during site restoration to ensure that runoff which leaves the project site will have no short-term adverse effects on the physical, biological, or chemical qualities of downstream receiving waters. The permanent seed mixture will restore the majority of the right of way to a meadow condition. Those areas which are not restored to a meadow condition will be restored to a lawn condition or forest. As a result of restoring the pipeline right of way as specified in the restoration plan, there will be no long-term effects to the physical, biological, or chemical qualities of downstream receiving waters. (2) The mainline pipeline will be restored to original grade so flow paths will not be altered. The right of way will be restored to achieve a meadow in good condition or better, with the exception of areas that will be returned to lawn or forest. In addition, the pipeline right of way accounts for only a narrow corridor of development within each drainage area to the nearest receiving water. As a result, post-development runoff rates to the nearest receiving water will not increase. (3) The right of way will be restored to a meadow in good condition or better in most areas, with the exception of specified locations where the right of way will be restored to the equivalent of its predevelopment land cover (lawn or forest). As a result, any potential increase in stormwater runoff volume has been minimized to the maximum extent practicable. (4) There are no proposed, permanent impervious features associated with the mainline pipeline. Temporary access roads will be restored to a vegetated condition following installation of the pipeline. (5) Existing drainage features and vegetation will be protected by restoring the project area back to its original grade. As a result, drainage features and existing vegetation surrounding the project area will be preserved. (6) Land clearing and grading will be minimized because the project area has been limited to the area required to safely install the natural gas pipelines. The pipeline right of way will be returned to original grade following installation of the pipelines. (7) Soil compaction will be minimized by utilizing travel lanes within the pipeline right of way. Following construction, areas that have been compacted will be scarified or ripped, or soil amendments will be incorporated prior to backfilling topsoil and seeding. After initiating restoration, vehicular traffic will be restricted to prevent soil compaction. (8) As demonstrated in 102.8(2) and 102.8(3), potential increases in post development stormwater runoff has been minimized to the maximum extent practicable utilizing nonstructural restoration BMPs.

In accordance with § 102.8(c), the mainline Site Restoration and Post Construction Stormwater Management Plan has been planned and designed and will be implemented in consistency with the E&S Plan.

In accordance with § 102.8(e), the Site Restoration and Post Construction Stormwater Management Plan has been prepared by Robert F. Simcik, P.E. who is trained and experienced in PCSM design methods and techniques applicable to the size and scope of the proposed pipeline project.

In accordance with § 102.8(f), the Site Restoration and Post Construction Stormwater Management Plan contains drawings and a narrative consistent with the requirements of Chapter 102. The Plan has been designed to minimize the threat to human health, safety, and the environment to the greatest extent practicable. The Plan includes the required information as outlined in § 102.8(f)(1) through § 102.8(f)(15).

4.0 POST-CONSTRUCTION STORMWATER MANAGEMENT ANALYSIS

The construction and restoration practices for the proposed major modification have been designed to meet the provisions PADEP Chapter 102 regulations. No new impervious area is proposed with the Major Modification. In general, the pre-construction drainage patterns surrounding the project will be maintained, and all disturbed areas within the pipeline ROW will be restored to a meadow in good condition. As a result of restoring all disturbed areas within the pipeline ROW to a meadow condition, the project will not result in increased stormwater runoff rate or volume.

4.1 BMP DESCRIPTION AND CONSTRUCTION SEQUENCE

There are no proposed PCSM BMPs for the Major Modification.

4.2 MATERIAL RECYCLING AND DISPOSAL

The operator will remove from the site, recycle, or dispose of all building materials and wastes in accordance with PADEP's solid waste management regulations at 25 Pennsylvania Code 260.1 et seq., 271.1 et seq., and 287.1 et seq. The contractor will not illegally bury, dump, or discharge building material or wastes at the site. Expected construction wastes resulting from operation and maintenance of post-construction stormwater management BMPs will consist of sediment and debris cleaned from PCSM BMPs during maintenance and inspections. Sediment removed from PCSM BMPs during onsite maintenance and inspection activities will be disposed of off-site. In cases where disposal is necessary, waste materials will be disposed of at an approved PADEP waste site.

4.3 THERMAL IMPACTS

Thermal impacts are most commonly associated with urbanization (i.e., increased impervious surfaces) that results in heated stormwater runoff flowing into receiving waters where it mixes, and potentially increases the base temperature of the surface water in streams. However, another contributing factor for stream temperature is solar exposure (radiant energy input) to the surface water, typically ponded, standing waters. The amount of heat transferred, and the degree of thermal pollution is of importance for fisheries management and the ecological integrity of receiving waters. Among the attributes that determine the contribution of solar energy to thermal impacts are the presence of riparian vegetation, as well as stream width, depth, flow regime (perennial, intermittent, ephemeral), and orientation.

4.4 RIPARIAN FOREST BUFFERS

A separate waiver request has been prepared and is provided as Attachment 6 to the NOI application. The following summarizes that request. The Pennsylvania Pipeline Project qualifies for an exemption of the riparian forest buffer requirement under Chapter 102.14(d)(1)(ix) for areas within the Chapter 105 permit area. Existing riparian forest buffers within the project area are identified on the E&S plan drawings in Attachment 2 of the E&S Plan.

In addition to the exemption, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

Demonstration of Waiver Necessity

A riparian forest buffer waiver is necessary to complete the intended scope of the pipeline project. The project is from Houston to Delmont, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. The project crosses through Blair County for approximately 23.5 miles, Huntingdon County for approximately 26.2 miles, Juniata County for approximately 3.0 miles, Perry County for approximately 10.4 miles Cumberland County for approximately 33.1 miles, York County for approximately 6.5 miles, Dauphin County for approximately 11.5 miles, Lebanon County for approximately 19.7 miles, Lancaster County for approximately 7.5 miles, and Berks County for approximately 20.4 miles. Due to the linear nature of the project and the surrounding topography, riparian forest buffers could not be avoided altogether.

Alternatives Analysis

Impacts to environmental resources, including riparian forest buffers, were evaluated during the pipeline routing phase of the project. Field teams were deployed to evaluate alternate routes based on environmental and constructability constraints. The final route that was selected minimizes environmental impacts to the maximum extent practicable while still maintaining the project's overall constructability and ensuring a safe working environment while also taking landowner constraints into consideration. Additionally, several variations of horizontal direction drill profiles were evaluated to minimize pullback areas, additional workspaces, and overall disturbance within riparian forest buffers. Permanent features, such as access roads and block valves, were evaluated to locate the features outside of the riparian forest buffer, where possible.

Demonstration of Minimizing Impacts

All disturbance activities, including those which impact riparian forest buffers, have been reduced to the maximum extent practicable. The LOD has been reduced to 50 feet wide at all stream crossings within the riparian forest buffer area where possible adjacent to the stream area required for crossing and construction. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian forest buffer, the LOD has been reduced to 50 feet wide within 10 feet of the stream banks to limit the proximity of the work areas as per the stream crossing detail from the PADEP manual. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control BMPs. In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian forest buffers where possible.

Meeting Requirements of Chapter 102

All other requirements of Chapter 102 to minimize impacts to riparian buffers are being met in the project's Erosion and Sediment Control Plan and Site Restoration/Post-Construction Stormwater Management Plans which have been designed in accordance with Chapter 102 and in HQ/EV watersheds to implement ABACT controls where non discharge alternatives do not exist. In accordance with Chapter 102, and E&S plan has been developed to minimize the sediment entering the buffer areas through the use of properly designed E&S bmp's such as, but not limited to, waterbars, compost filter sock, diversion berms, slope pipes and erosion control blanket. A site restoration plan is proposed to revegetate the buffer areas within the right of way. The post construction stormwater management plan has been designed to control runoff rate and volume at permanent above ground facilities through infiltration practices.

4.5 INSPECTION AND MAINTENANCE PROCEDURES

Long-term maintenance of the pipeline ROW will include periodic visual inspections for sufficient vegetative growth and cover. Insufficient vegetative cover is defined as any area not achieving a uniform 70-percent perennial vegetative cover. Bare spots and areas with insufficient vegetative cover will be reseeded and mulched within 24 hours of discovery. The right of way will be inspected for signs of erosion, especially on steep slopes. Corrective measures will be taken, as needed. If there is evidence of trench settling, the area will be regraded to maintain pre-construction drainage patterns, mulched, and seeded. A written report is required for each inspection and for each repair or maintenance activity, and the report should specify how to access the site. SPLP is responsible for maintaining the ROW under the provisions of this permit.

4.6 ANTIDEGRADATION REQUIREMENTS

The Horse Valley Major Modification earth disturbance activities will be located within a HQ watershed. ABACT BMPs will be implemented to protect and maintain the existing water quality of the receiving waters.

Non-discharge alternatives were evaluated to minimize accelerated E&S and achieve zero net change in runoff between the pre and post-construction conditions. Non–discharge alternatives exist when the existing land use is revegetated and existing grade is restored, therefore resulting in no increase in runoff rate or volume from pre to post construction results. Other non-discharge alternatives implemented are limiting and minimizing the extent of disturbed areas and limiting the extent and duration of disturbance (phasing and sequencing) then stabilizing disturbed areas as soon as practicable. To alleviate compaction from construction and restoration activities, surface roughening techniques such as deep ripping or chisel ripping will restore compacted areas to a minimal compacted state. ABACT BMPs will be used onsite to protect and maintain the existing water quality of receiving waters also in areas where non-discharge alternatives exist.

Where non-discharge alternatives do not exist, ABACT BMPs will be used onsite to protect and maintain the quality of the receiving HQ and EV resources. The below table addresses the antidegradation analysis for the

specific block valve sites that require post construction stormwater management within High Quality, Exceptional Value and siltation impaired watersheds.

4.7 STORMWATER RUNOFF ANALYSIS

The pre-construction drainage patterns surrounding the project will be maintained. All disturbed areas within the Horse Valley Major Modification LOD will be restored to a meadow in good condition or lawn where required by landowners. As a result of restoring the pipeline ROW and associated workspaces associated with the Major Modification to a meadow in good condition and maintaining pre-construction drainage patterns, there will be no increase in stormwater runoff rate or volume attributed to those areas.

5.0 REFERENCES

Erosion and Sediment Pollution Control Program Manual, Commonwealth of Pennsylvania, Department of Environmental Protection, Office of Water Management, March 2012.

Stormwater Management for Construction Activities - Developing Pollution Prevention Plans and Best Management Practices, United States Environmental Protection Agency, Office of Water, 1993.

Pennsylvania Stormwater Best Management Practices Manual, Pennsylvania Department of Environmental Protection, Bureau of Watershed Management, December, 2006.

Cresson, Hollidaysburg, Frankstown, and Williamsburg Quadrangles, Pennsylvania – Blair County, Geological Survey, United States Department of Interior.

Soil Survey of Blair County, Pennsylvania, United States Department of Agriculture, Soil Conservation Service.

DCNR, 2016. *Invasive Plants in Pennsylvania, Crown Vetch,* Coronilla varia. Accessed October 25, 2016. http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_010284.pdf.

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Blair Run (5)	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Blair Run	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Poplar Run (1)	Blair	Juniata	COLD WATER FISHES	CWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Dry Run (2)	Blair	Juniata	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Dry Run (20)	Blair	Juniata	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Blair Gap Run (1)	Blair	Juniata	TROUT STOCKING	TSF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Beaverdam Branch (3)	Blair	Blair	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
UNT to Frankstown Branch Juniata River (15)	Blair	Blair	WARM WATER FISHES	WWF	No	N/A	Yes	Cause Unknown; Metals; pH; Organic Enrichment/Low D.O.
Frankstown Branch Juniata River (2)	Blair	Blair	WARM WATER FISHES	WWF	Yes	Industrial Point Source-Siltation	No	N/A

Receiving Waters Table
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Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Frankstown Branch Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No	Industrial Point Source-Siltation	No	N/A
UNT to Oldtown Run (11)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Oldtown Run	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Robinson Run (8)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Juniata River (22)	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	No	N/A	No	N/A
Frankstown Branch Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	Yes	Industrial Point Source-Suspended Soilds	No	N/A
UNT to Piney Creek (6)	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Piney Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Clover Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Raystown Branch Juniata River (37)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
James Creek	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to James Creek (13)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Raystown Lake (9)	Huntingdon	Penn	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Little Trough Creek (7)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Little Trough Creek	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Smith Run (11)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Smith Run	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Hares Valley Creek (9)	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Hares Valley Creek	Huntingdon	Union	TROUT STOCKING	TSF	No	N/A	No	N/A
Scrub Run	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Scrub Run (1)	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Singers Gap Run	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Singers Gap Run (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hill Valley Creek (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Hill Valley Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Juniata River (3)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Aughwick Creek (8)	Huntingdon	Shirley	TROUT STOCKING	TSF	No	N/A	No	N/A
Aughwick Creek (2)	Huntingdon	Shirley	TROUT STOCKING	TSF	No	N/A	No	N/A
UNT to Fort Run (7)	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes	N/A	No	N/A
Fort Run	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes	N/A	No	N/A
UNT to Blacklog Creek (6)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Blacklog Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to George Creek (19)	Huntingdon	Tell	COLD WATER FISHES	CWF	No	N/A	No	N/A
George Creek	Huntingdon	Tell	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to George Creek (7)	Juniata	Lack	COLD WATER FISHES	CWF	No	N/A	No	N/A
George Creek	Juniata	Lack	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Tuscarora Creek (20)	Juniata	Lack	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Tuscarora Creek	Juniata	Lack	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Horse Valley Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Horse Valley Run (7)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A

Receiving Waters Table
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Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Shermans Creek (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shermans Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Shultz Creek (4)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shultz Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Shaeffer Run (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Shaeffer Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Bull Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Laurel Run	Perry	Jackson	EXCEPTIONAL VALUE	EV	Yes	Atmospheric Deposition-Metals	No	N/A
UNT to Laurel Run (7)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
UNT to South Branch Laurel Run (1)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
South Branch Laurel Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No	Atmospheric Deposition-Metals	No	N/A
UNT to Double Gap Creek (12)	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Doubling Gap Creek	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Double Gap Creek (2)	Cumberland	Upper Frankford	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
Rock Run	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Rock Run (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (8)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Bloser Creek (5)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
Bloser Creek	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Locust Creek (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Locust Creek (8)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
Locust Creek	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (3)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Opossum Creek (9)	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No	N/A	No	N/A
Opossum Creek	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No	N/A	No	N/A
UNT to Conodoguinet Creek (30)	Cumberland	North Middleton	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation; Construction- Siltation; Habitat Modification-Flow Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Meetinghouse Run (5)	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
Meetinghouse Run	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
Conodoguinet Creek	Cumberland	North Middleton	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (13)	Cumberland	Middlesex	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Letort Spring Run (3)	Cumberland	Middlesex	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Letort Spring Run (3)	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No	N/A	No	N/A
Letort Spring Run	Cumberland	Middlesex	COLD WATER FISHES	CWF	No	N/A	No	N/A
Letort Spring Run	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No	N/A	No	N/A
UNT to Conodoguinet Creek (10)	Cumberland	Middlesex	WARM WATER FISHES	WWF	No	N/A	No	N/A

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Pennsylvania Pipeline Project
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Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
Hogestown Run	Cumberland	Silver Spring	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Trindle Spring Run	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Trindle Spring Run (1)	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	Yes	Agriculture- Siltation; Agriculture- Organic Enrichment/Low D.O.; Urban Runoff/Storm Sewers- Cause Unknown	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Yellow Breeches Creek (13)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cedar Run (5)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes	Source Unknown- Pathogens	No	N/A
Yellow Breeches Creek	Cumberland	Lower Allen	COLD WATER FISHES	CWF	No	N/A	No	N/A
Yellow Breeches Creek	York	Fairview	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Yellow Breeches Creek (12)	York	Fairview	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Marsh Run (8)	York	Fairview	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Susquehanna River (9)	York	Fairview	WARM WATER FISHES	WWF	No	N/A	No	N/A
Susquehanna River	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	Yes	Source Unknown- PCB	No	N/A
UNT to Lisa Lake (9)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Susquehanna River (2)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	Urban Runoff/Storm Sewers- Cause Unknown; Habitat Modification- Cause Unknown	No	N/A
UNT to Swatara Creek (11)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No	N/A	No	N/A
Swatara Creek	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Swatara Creek (3)	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Swatara Creek (6)	Dauphin	Londonderry	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation; Other- Siltation	No	N/A
UNT to Iron Run (3)	Dauphin	Londonderry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Iron Run (13)	Dauphin	Derry	WARM WATER FISHES	WWF	No	N/A	No	N/A
Iron Run	Dauphin	Derry	WARM WATER FISHES	WWF	No	N/A	No	N/A
UNT to Iron Run	Dauphin	Conewago	WARM WATER FISHES	WWF	Yes	Agriculture- Siltation	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Spring Creek (23)	Dauphin	Conewago	WARM WATER FISHES	WWF	Yes	Agriculture- Organic Enrichment/Low D.O.; Agriculture- Siltation	No	N/A
UNT to Spring Creek (7)	Lebanon	South Londonderry	WARM WATER FISHES	WWF	Yes	Agriculture- Organic Enrichment/Low D.O.; Agriculture- Siltation	No	N/A
UNT to Killinger Creek (8)	Lebanon	South Londonderry	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Buckholder Run (5)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Buckholder Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Gingrich Run (4)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Gingrich Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Siltation; Agriculture- Flow Alterations; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Bachman Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients; Crop Related- Siltation	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Beck Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
Snitz Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Agriculture- Nutrients	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Snitz Creek (1)	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes	Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Quittapahilla Creek (1)	Lebanon	South Lebanon	TROUT STOCKING	TSF	Yes	Urban Runoff/Storm Sewers- Flow Alterations; Bank Modifications- Other Habitat Alterations	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
UNT to Hammer Creek (6)	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Hammer Creek	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes	Agriculture- Siltation; Source Unknown- Pathogens	Yes	Nutrients; Siltation; Organic Enrichment/Low D.O.; Suspended Soilds
Middle Creek	Lebanon	Heidelberg	WARM WATER FISHES	WWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Middle Creek (5)	Lebanon	Heidelberg	WARM WATER FISHES	WWF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cocalico Creek (9)	Lancaster	Clay	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
UNT to Cocalico Creek (22)	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
Cocalico Creek	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	Yes	Source Unknown- Pathogens	No	N/A
Harnish Run	Lancaster	West Cocalico	WARM WATER FISHES	WWF	Yes	Habitat Modification; Other Habitat Alterations; Source Unknown- Pathogens	No	N/A
UNT to Harnish Run (3)	Lancaster	West Cocalico	WARM WATER FISHES	WWF	Yes	Habitat Modification; Other Habitat Alterations; Source Unknown- Pathogens	No	N/A
UNT to Little Cocalico Creek (4)	Lancaster	West Cocalico	TROUT STOCKING	TSF	Yes	Source Unknown- Pathogens	No	N/A
UNT to Little Cocalico Creek (5)	Berks	South Heidelberg	TROUT STOCKING	TSF	No	N/A	No	N/A

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
UNT to Cacoosing Creek (8)	Berks	South Heidelberg	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Cacoosing Creek	Berks	South Heidelberg	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Cacoosing Creek (15)	Berks	Spring	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
Little Muddy Creek	Berks	Spring	TROUT STOCKING	TSF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Wyomissing Creek (13)	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	Yes	Source Unknown-Pathogens	Yes	Cause Unknown; Siltation
Wyomissing Creek	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	Yes	Source Unknown-Pathogens	Yes	Cause Unknown; Siltation
Allegheny Creek	Berks	Brecknock	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Allegheny Creek (19)	Berks	Brecknock	COLD WATER FISHES	CWF	Yes	Source Unknown-Pathogens	No	N/A
UNT to Sleepy Hollow Run (2)	Berks	Brecknock	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Sleepy Hollow Run (2)	Berks	Brecknock	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Rock Run (8)	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
Rock Run	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
UNT to Rock Run	Berks	Robeson	HIGH QUALITY-TROUT STOCKING	HQ	No	Source Unknown-Pathogens	No	N/A
Hay Creek	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No	N/A	No	N/A
Hay Creek	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hay Creek (12)	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	HQ	No	N/A	No	N/A
UNT to Hay Creek (12)	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No	N/A	No	N/A
UNT to Hay Creek	Berks	New Morgan	COLD WATER FISHES	CWF	No	N/A	No	N/A
UNT to Conestoga River (1)	Berks	New Morgan	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other-Organic Enrichment/Low D.O.; Source Uknown-Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.
UNT to East Branch Conestoga River (12)	Berks	New Morgan	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other-Organic Enrichment/Low D.O.; Source Uknown-Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.

Receiving Waters Table
Pennsylvania Pipeline Project
South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Impaired	Impairment	TMDL	TMDL Limits
East Branch Conestoga River	Berks	Caernarvon	WARM WATER FISHES	WWF	Yes	Agriculture- Nutrients; Other- Nutrients; Other- Organic Enrichment/Low D.O.; Source Uknown- Pathogens	Yes	Nutrients; Organic Enrichment/Low D.O.

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
BLAIR COUNTY			
Juniata	UNT to Blair Run	4	1 (Wild Trout)
Juniata	UNT to Dry Run	16	6 (Wild Trout)
Blair	UNT to Dry Run	5	2 (Wild Trout)
Blair	UNT to Beaverdam Branch	2	0
Blair	UNT to Frankstown Branch Juniata River	21	3 (Wild Trout)
Frankstown	UNT to Oldtown Run	9	3 (Wild Trout)
Frankstown	UNT to Robinson Run	7	0
Frankstown	UNT to Frankstown Branch Juniata River	41	10 (Wild Trout)
Woodbury	UNT to Piney Creek	3	1 (Wild Trout)
Woodbury	UNT to Clover Creek	2	2 (Wild Trout)
HUNTINGDON COUNTY			
Penn	UNT to James Creek	28	0
Penn	UNT to Raystown Branch Juniata River	2	0
Union	UNT to Little Trough Creek	10	0
Union	UNT to Smith Run	5	0
Union	UNT to Hares Valley Creek	7	0
Union	UNT to Scrub Run	3	0
Shirley	UNT to Singers Gap Run	2	0
Shirley	UNT to Juniata River	4	0
Shirley	UNT to Aughwick Creek	6	0
Shirley	UNT to Fort Run	9	0
Shirley	UNT to Blacklog Creek	11	0
Tell	UNT to George Creek	14	0
JUNIATA COUNTY			
Lack	UNT to George Creek	2	0
Lack	UNT to Tuscarora Creek	5	0
PERRY COUNTY			
Toboyne	UNT to Horse Valley Run	2	2 (Wild Trout)
Toboyne	UNT to Sherman Creek	7	4 (Wild Trout)
Toboyne	UNT to Shultz Creek	4	4 (Wild Trout)
Toboyne	UNT to Schaeffer Run	4	1 (Wild Trout)
Jackson	UNT to South Branch Laurel Run	6	3 (Wild Trout); 1 (WT/EV Stream)

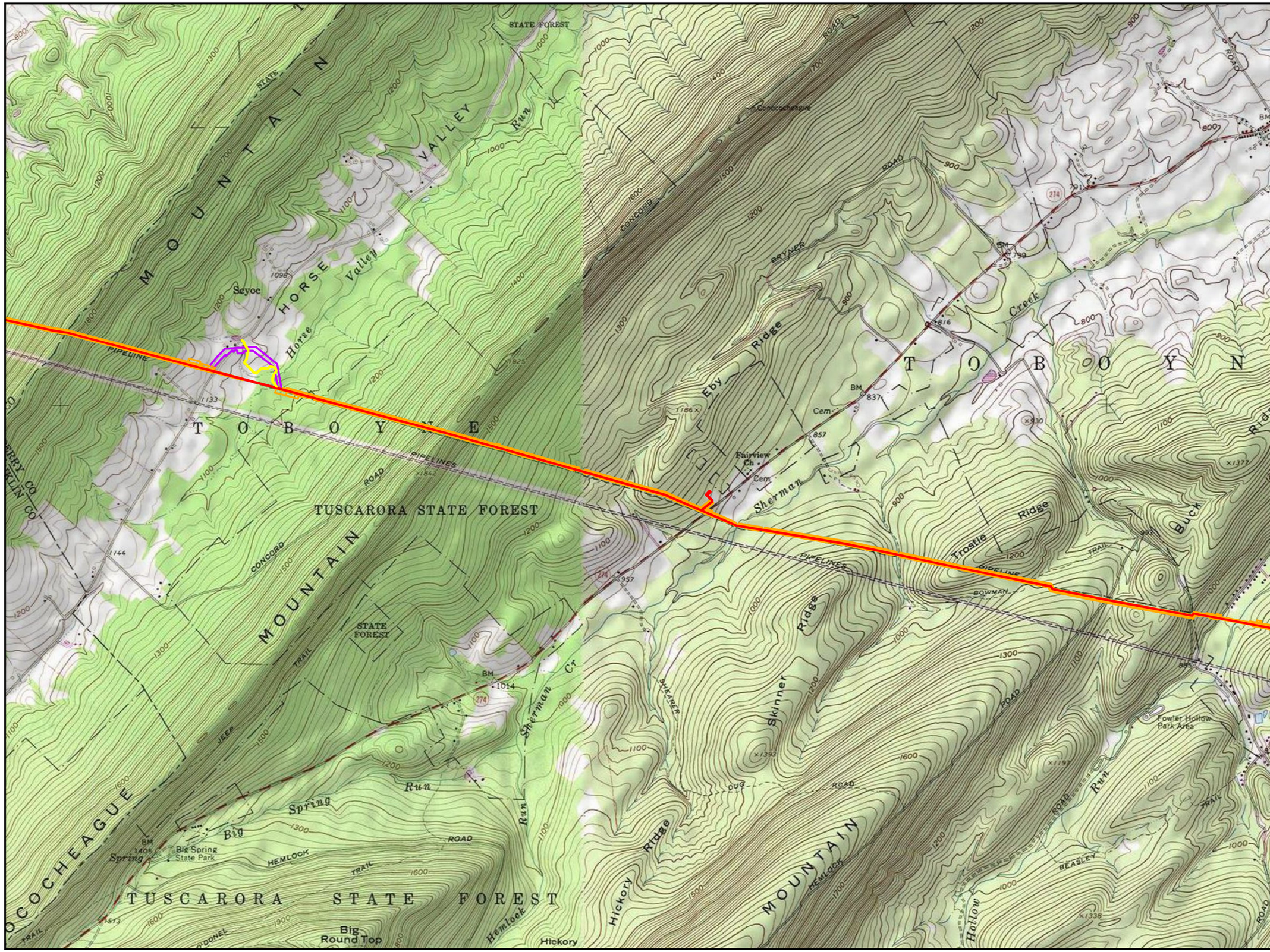
Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
CUMBERLAND COUNTY			
Lower Mifflin	UNT to Doubling Gap Creek	11	0
Upper Frankford	UNT to Doubling Gap Creek	1	0
Upper Frankford	UNT to Rock Run	2	0
Upper Frankford	UNT to Conodoguinet Creek	10	0
Upper Frankford	UNT to Bloser Creek	14	0
Upper Frankford	UNT to Locust Creek	1	0
Lower Frankford	UNT to Locust Creek	10	1 (PuWS)
Lower Frankford	UNT to Opossum Creek	13	0
Lower Frankford	UNT to Conodoguinet Creek	10	0
North Middleton	UNT to Conodoguinet Creek	6	0
North Middleton	UNT to Meetinghouse Run	2	1 (PuWS)
North Middleton	UNT to Conodoguinet Creek	23	5 (PuWS)
Middlesex	UNT to Conodoguinet Creek	9	0
Middlesex	UNT to Letort Spring Run	5	3 (Wild Trout)
Silver Spring	UNT to Hogestown Run	2	0
Upper Allen	Unt to Yellow Breeches Creek	5	0
Lower Allen	UNT to Cedar Run	2	1 (Wild Trout)
Lower Allen	Unt to Yellow Breeches Creek	8	0
YORK COUNTY			
Fairview	Unt to Yellow Breeches Creek	7	0
Fairview	UNT to Marsh Run	4	0
Fairview	UNT to Susquehanna River	17	0
DAUPHIN COUNTY			
Lower Swatara	UNT to Susquehanna River	13	0
Highspire	UNT to Susquehanna River	2	0
Lower Swatara	UNT to Swatara Creek	3	0
Middletown	UNT to Swatara Creek	3	0
Londonderry	UNT to Swatara Creek	18	0
Londonderry	UNT to Iron Run	1	0
Derry	UNT to Iron Run	8	0
Conewago	UNT to Spring Creek	12	0

Recieving Wetlands Table
Pennsylvania Pipeline Project
South-Central Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
LEBANON COUNY			
South Londonderry	UNT to Spring Creek	4	0
South Londonderry	UNT to Killinger Creek	3	0
South Annville	UNT to Buckholder Run	5	0
South Annville	UNT to Gingrich Run	2	0
West Cornwall	UNT to Beck Creek	2	0
West Cornwall	UNT to Snitz Creek	2	0
South Lebanon	UNT to Quittapahilla Creek	1	0
South Lebanon	UNT to Hammer Creek	1	1 (Wild Trout)
Heidelberg	UNT to Hammer Creek	6	3 (Wild Trout)
Heidelberg	UNT to Middle Creek	5	0
LANCASTER COUNTY			
West Cocalico	UNT to Cocalico Creek	19	5 (Bog Turtle)
West Cocalico	UNT to Harnish Run	4	0
West Cocalico	UNT to Little Cocalico Creek	6	0
BERKS COUNTY			
South Heidelberg	UNT to Little Cocalico Creek	5	0
South Heidelberg	UNT to Cacoosing Creek	14	8 (Wild Trout)
Spring	UNT to Cacoosing Creek	7	2 (Wild Trout)
Spring	UNT to Little Muddy Creek	7	0
Cumru	UNT to Wyomissing Creek	8	2 (Wild Trout); 1 (WT/Bog Turtle)
Brecknock	UNT to Allegheny Creek	16	12 (Wild Trout)
Brecknock	UNT to Rock Run	4	2(Wild Trout)
New Morgan	UNT to Hay Creek	11	3 (Wild Trout/EV Stream)
Caernarvon	UNT to East Branch Conestoga River	9	0

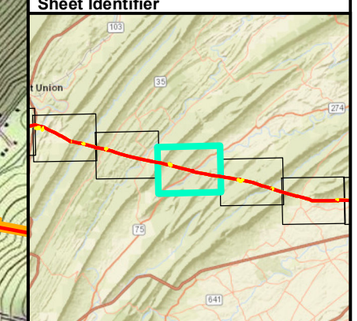
ATTACHMENT 1 – USGS LOCATION MAP



Legend

- Major Modification I LOD
- Previously Approved LOD
- Block Valve/Station
- Access Road
- Alignment Centerline

Sheet Identifier



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Feet: 0 1,000 2,000

Meters: 0 300 600

PROJECT LOCATION MAP
ATTACHMENT 1-10
PENNSYLVANIA PIPELINE PROJECT
NOVEMBER 12, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
JUNIATA, PERRY COUNTY, PENNSYLVANIA

TETRA TECH

Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Quadrangles being displayed are Blairs Mills

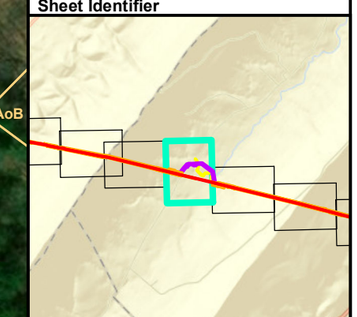
PGH: P:\GIS\SUNOCO\MARINER EAST 2\MXD\PPP ESC\GIP\PENNP\PELINE_SOUTHCENTRAL_USGS_ESCGP.MXD 02/14/19 TT

ATTACHMENT 2 – SOILS MAP, SOILS DESCRIPTIONS, GEOLOGIC FORMATIONS MAP

Legend

- Stationing
- Major Modification I LOD
- Previously Approved LOD
- Block Valve/Station
- Access Road
- Alignment Centerline
- Natural Resources Conservation Service (NRCS) Soils & Code

Sheet Identifier



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Feet: 0 100 200

Meters: 0 30.48 60.96

NRCS SOILS MAP
ATTATCHMENT 5-105
PENNSYLVANIA PIPELINE PROJECT
AUGUST 14. 2017 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PERRY COUNTY, PA

TETRA TECH

Notes:
Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2013 ESRI and its data suppliers).

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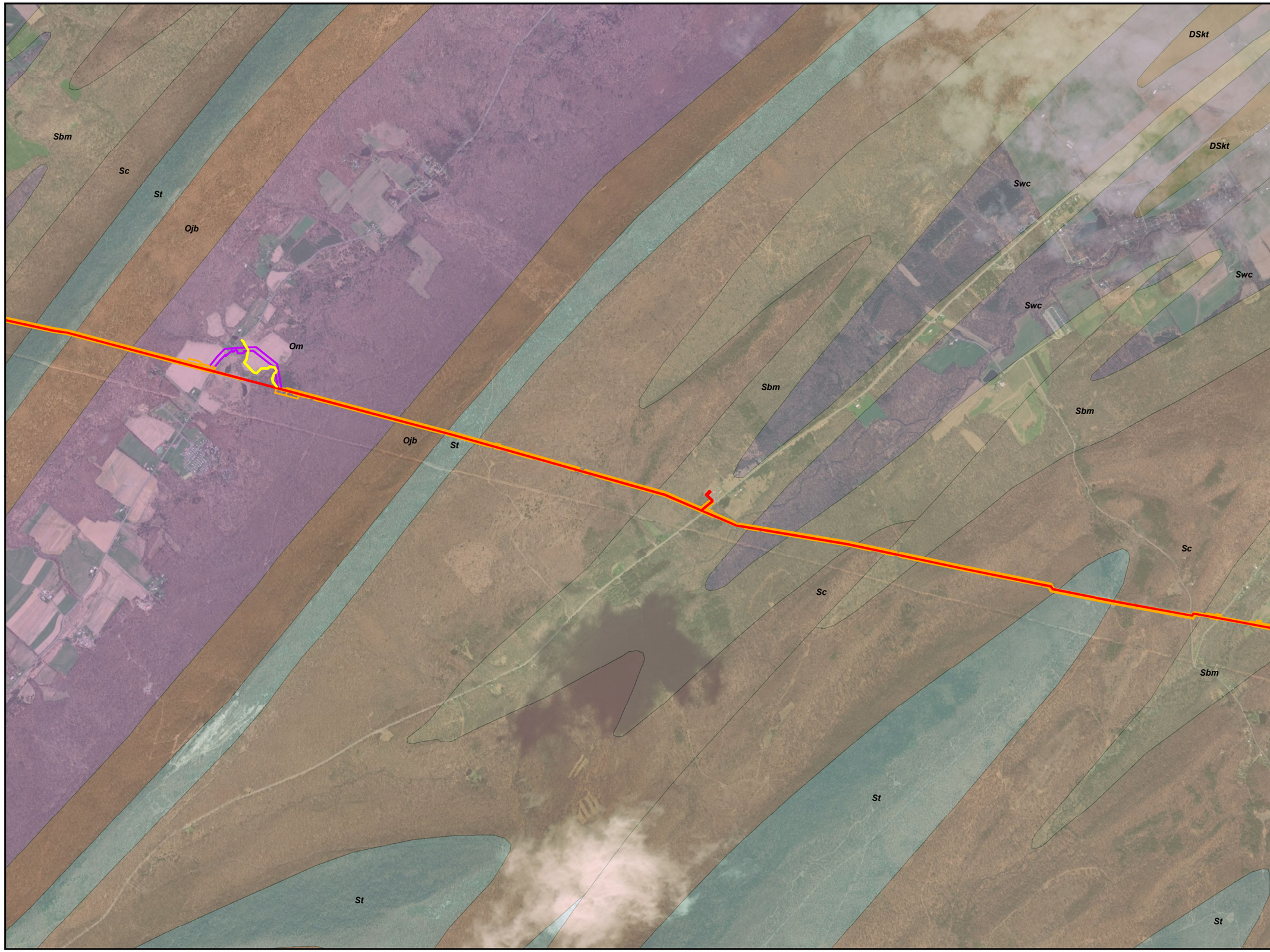
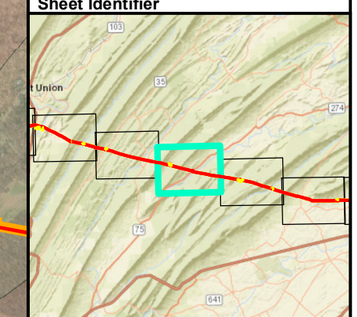


Legend

- Alignment Centerline
- Block Valve/Station
- Access Road
- Major Modification I LOD
- Limit of Disturbance
- Keyser and Tonoloway Formations Undevided (DSkt)
- Juniata and Bald Eagle Formations undivided (Ojb)
- Martinsburg Formation (Om)
- Bloomsburg and Mifflintown Formations undivided (Sbm)
- Clinton Group (Sc)
- Tuscarora Formation (St)
- Wills Creek Formation (Swc)

Sheet Identifier



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0 1,000 2,000 Feet

0 300 600 Meters

GEOLOGIC UNIT MAP
ATTACHMENT 5-10
PENNSYLVANIA PIPELINE PROJECT
NOVEMBER 12, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
JUNIATA, PERRY COUNTY,
PENNSYLVANIA

TETRA TECH

Notes:
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9. NOV'S

SUNOCO PIPELINE L.P.
COMPLIANCE HISTORY

Permit Number	HDD/Bore ID	Township	County	Status	Incident Date	Date Resolved
E21-449 ESG030015002	PA-CU-0062.0000-WX-HDD	Lower Frankford	Cumberland	Resolved	2/28/2018 6:00	2/27/2018 0:00
E38-194 ESG030015002	PA-LE-0055.0000-RD-HDD	West Cornwall	Lebanon	Resolved	3/16/2018 6:00	6/9/2018 0:00
E07-459 ESG030015002	PA-BL-0001.0094-WX-HDD	Frankstown	Blair	Resolved	3/16/2018 6:00	Drilling resumed on 3/31/2018.
E07-459 ESG030015002	HDD PA-BL-0122.0000-WX	Frankstown	Blair	Resolved	3/19/2018 6:00	HDD abandoned for Direct Pipe Method following submission of a Minor Mod. 4/22/2018
E31-234 ESG030015002	PA-HU-0106.0000-RD-HDD	Shirley	Huntingdon	Resolved	3/26/2018 6:00	4/9/2018 0:00
E50-258, ESG0300015002	PA-PE-0002.0000-RD-HDD	Toboyne	Perry	Resolved	3/29/2018 0:00	4/3/2018 0:00
E07-459 ESG030015002	PA-BL-0001.0094-WX-HDD	Frankstown	Blair	Resolved	4/6/2018 6:00	Restart approved. Setup changes on 4/20/2018 and ream resumed on 4/21/2018.
E07-459 ESG030015002	PA-BL-0001.0048-RR-HDD	Blair	Blair	Resolved	4/10/2018 6:00	Restart approval received on 5/25/2018.
E38-194 ESG030015002	PA-LE-0055.0000-RD-HDD	West Cornwall	Lebanon	Resolved	4/20/2018 6:00	8/21/2018 0:00
E23-524 ESG0100015001	PA-DE-0100.0000-RR-HDD	Middletown	Delaware	Resolved	5/3/2018 6:00	IR(s) were contained and cleaned up on the dates that they occurred (4/18/18, 4/19/18(emerged with in containment), and 4/20/18. Restoration of this area was completed on 10/19/18.
E11-352 ESG0500015001	PA-CA-0023.0000-RD-HDD	Jackson	Cambria	Resolved	5/8/2018 16:30	5/8/2018 20:00:00 PM
E11-352 ESG0500015001	PA-CA-0016.0000-RD	Jackson	Cambria	Resolved	5/15/2018 6:00	1/7/2019 restoration
E63-674 ESG0500015001	PA-WA1-0127.0000-RD	Nottingham	Washington	Resolved	5/15/2018 0:00	9/1/2018 0:00
E38-194 ESG030015002	PA-LE-0055.0000-RD-HDD	West Cornwall	Lebanon	Resolved	6/1/2018 6:00	8/21/2018 0:00
E38-194 ESG030015002	PA-LE-0055.0000-RD-HDD	West Cornwall	Lebanon	Resolved	6/11/2018 6:00	8/21/2018 0:00
E23-524 ESG0100015001	PA-DE-0104.0008-WX-HDD	Middletown	Delaware	Resolved	6/14/2018 6:00	6/10/2018 0:00
E07-459 ESG030015002	PA-BL-0001.0048-RR-HDD	Blair	Blair	Resolved	6/15/2018 6:00	7/6/2018 0:00
E65-973 ESG0500015001	PA-WM1-0023.0000-RD-HDD	West Newton	Westmoreland	Resolved	6/19/2018 6:00	6/18/2019 1830
E11-352 ESG0500015001	PA-CA-0023.0000-RD-HDD	Jackson	Cambria	Resolved	6/21/2018 0:00	6/21/2018 0:00

SUNOCO PIPELINE L.P.
COMPLIANCE HISTORY

Permit Number	HDD/Bore ID	Township	County	Status	Incident Date	Date Resolved
E38-194 ESG030015002	PA-LE-0055.0000-RD-HDD	West Cornwall	Lebanon	Resolved	6/28/2018 6:00	8/21/2018 0:00
E06-701 ESG0300015002	PA-BR-0181.0000-RD-HDD	Caernarvon	Berks	Resolved	6/28/2018 6:00	7/31/2019 0:00
E63-674 ESG0500015001	PA-WA-0127.0000-RR-HDD	Nottingham	Washington	Resolved	5/29/2018 6:00	5/25/2018 0:00
E21-449 ESG030015002	PA-CU-0136.0002-WX	Middlesex	Cumberland	Resolved	7/7/2018 6:00	8/1/2018 0:00
E63-674 ESG0500015001	PA-WA-0119.0000-RD-HDD	North Strabane	Washington	Resolved	7/16/2018 6:00	7/30/18 with completion of anomaly repair. No drilling was occurring when this instance occurred.
E23-524 ESG0100015001	PA-DE-0100.0000-RR-16	Middletown	Delaware	Restoration Pending	7/18/2018 23:00	IR was contained and cleaned up on 7/14/18. Currently waiting on soil approval from PADEP to complete restoration of wetland WL-I1.
E11-352 ESG0500015001	PA-CA-0016.0000-RD	Jackson	Cambria	Resolved	7/23/2018 23:00	Stream impact ended on 07/22/2018. 7/25/2018 17:00:00 PM recovery of the turbid water from the spring house was completed.
E21-449 ESG0300015002	PA-CU-0136.0002-WX	Middlesex	Cumberland	Resolved	7/24/2018 23:00	7/25/2018 0:00
E23-524 ESG0100015001	PA-DE-0100.0000-RR-16	Middletown	Delaware	Resolved	7/24/2018 23:00	IR was contained and cleaned up on 7/20/18 at each location. Restoration of storm drain outlet containment area was completed on 10/6/18.
E23-524 ESG0100015001	PA-DE-0100.0000-RR-16	Middletown	Delaware	Resolved	7/30/2018 23:00	IR was contained and cleaned up on 7/30/18. Upland restoration completed on 10/19/18. Storm drain outlet restoration completed on 10/6/18. Parking lot restoration completed on 11/2/18.
E23-524 ESG0100015001	PA-DE-0104.0008-WX-HDD (or possibly PA-DE-0104.0015-RD-HDD?)	Aston	Delaware	Resolved	8/8/2018 23:00	Repairs were made on 7/9/18
E63-674 ESG0500015001	PA-WA1-0127.0000-RD	Nottingham	Washington	Resolved	8/12/2018 23:00	8/30/2018 0:00
E11-352 ESG0500015001	PA-CA-0069.0000-RD	Munster	Cambria	Resolved	8/12/2018 23:00	Remediation of the 08/03/2018 IR site was completed on 08/03/2018. Remediation of the 08/04 IR site was completed in 08/06/2018.
E38-194 ESG0300015002	PA-LE-0055.0000-RD	West Cornwall	Lebanon	Resolved	8/15/2018 23:00	8/21/2018 0:00
E23-524 ESG0100015001	PA-DE-0100.0000-RR-16	Middletown	Delaware	Resolved	8/28/2018 23:00	IR was contained and cleaned up on 8/22/18 and 8/26/18. Upland restoration was completed on 10/19/18.

SUNOCO PIPELINE L.P.
COMPLIANCE HISTORY

Permit Number	HDD/Bore ID	Township	County	Status	Incident Date	Date Resolved
E11-352 ESG0500015001	PA-CA-0023.0000-RD	Jackson	Cambria	Resolved	8/25/2018 0:00	IR containment and recovery completed on 08/25/2018. Relief well drilled on 09/23 as indicated on the restart procedures issued by PADEP.
E21-449 ESG0300015002	PA-CU-0136.0002-WX	Middlesex	Cumberland	Resolved	9/13/2018 23:00	9/3/2018 0:00
E06-701 ESG0300015002	PA-BR-0181.0000-RD	Caernarvon	Berks	Resolved	9/16/2018 23:00	9/18/2018 0:00
E11-352 ESG0500015001	PA-CA-0016.0000-RD-HDD	Munster	Cambria	Resolved	9/17/2018 23:00	10/25/2018 0:00
E11-352 ESG0500015001	PA-CA-0016.0000-RD-HDD	Jackson	Cambria	Resolved	9/17/2018 23:00	Drilling fluid recovery completed on 09/14 following 09/12 IR. IR recovery completed on 09/15 IR event. Relief well completed on 10/07/2018.
E06-701 ESG0300015002	PA-BR-0181.0000-RD-HDD	Caernarvon	Berks	Resolved	9/17/2018 23:00	1/15/119
E07-459 ESG0300015002	PA-BL-0126.0000-RD-HDD	Woodbury	Blair	Resolved	10/2/2018 23:00	Restart Report submitted on 10/4/2018 with DEP approval on 10/6/2018.
E07-459 ESG0300015002	PA-BL-0126.0000-RD-HDD	Woodbury	Blair	Resolved	10/8/2018 23:00	Restart Report submitted on 10/8/2018 with DEP approval on 10/9/2018.
E07-459 ESG0300015002	PA-BL-0126.0000-RD-HDD	Woodbury	Blair	Resolved	10/10/2018 23:00	Bore hole grouted on 10/11/2018.
E07-459 ESG0300015002	PA-BL-0126.0000-RD	Woodbury	Blair	Resolved	10/15/2018 23:00	12/23/2018 0:00
E07-459 ESG030015002	PA-BL-0001.0078-WX-FlexBore	Blair	Blair	Resolved	10/17/2018 23:00	Restart approval received on 10/26/2018.
PAG103570	Not Applicable	Multiple	Cumberland, Huntingdon, Juniata	Pending Resolution	10/22/2018 23:00	Pending Resolution

10. AQUATIC RESOURCE REPORT

Aquatic Resources Report
Horse Valley Reroute
Perry County, Pennsylvania

February 2019

Prepared for:

Sunoco Pipeline, L.P.
535 Fritztown Road
Sinking Spring, PA 19608

Prepared by:

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ATTACHMENTS

Attachment A – Figures
Attachment B – Wetland Photographic Log
Attachment C – Waterbody Photographic Log
Attachment D – Wetland Data Forms
Attachment E – Stream Data Forms

Aquatic Resources Report
Horse Valley Reroute
Perry County, Pennsylvania

1.0 Introduction

Tetra Tech, Inc. (Tetra Tech) was contracted by Sunoco Pipeline L.P. to perform a wetland assessment of an approximately 43-acre area in the vicinity of the proposed Horse Valley Road 16" Right-of Way (ROW) crossing, in Blairs Mills Township, Perry County, PA.

The purpose of this investigation was to determine the presence and extent of resources within the survey area that meet the criteria for federal wetlands designation according to the United States Army Corps of Engineers (USACE) guidelines and are potentially jurisdictional and regulated under Section 404 of the Clean Water Act (CWA). Background review information such as U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) mapped soils and presence of U.S. Fish and Wildlife Service National Wetlands Inventory (USFWS NWI) features are summarized within Survey Methods below.

The following report summarizes the characteristics of delineated resources and report attachments include: Attachment A – Figures, Attachment B – Wetland Photographic Log, and Attachment C – Waterbody Photographic Log, Attachment D – Wetland Data Forms, and Attachment E – Stream Data Forms.

2.0 Survey Methods

2.1 Background Research

Prior to conducting fieldwork, Tetra Tech reviewed existing information for the survey area, including:

- United States Geological Survey (USGS) 7.5-minute series topographic quadrangle maps for the survey areas (Blairs Mills, PA 1972).
- Soil survey maps, descriptions, and lists, to determine presence and extent of hydric and upland soils (USDA NRCS 1965), Web Soil Survey database for Perry County, Pennsylvania.
- NWI geospatial data available from the USFWS for the survey area (USFWS, Wetlands Mapper, data downloaded January 2019); and,
- Aerial photographs to identify drainage and other hydrologic features (Environmental Sciences Research Institute, Inc. [ESRI] online mapping services, available at: services.arcgisonline.com/arcgis/service).

2.2 On-Site Delineation

Following the review of background information, two wetland scientists performed a field survey on January 29, 2019. The survey consisted of walk-through inspection of the survey area to identify topographic, drainage, and vegetation features that would indicate the potential for a wetland determination. Potential wetlands were further evaluated by collecting soil, vegetation, and hydrology data at upland and wetland sample locations at suspected wetland boundaries. Sample plot data were recorded on Eastern Mountains and Piedmont Region Wetland Determination Data Forms provided within the regional supplement.

The survey area was evaluated for the presence and extent of wetlands using the routine, Level-2 determination method described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual:*

Eastern Mountains and Piedmont Region (Version 2.0) (USACE 2012). Wetlands identified and delineated were subsequently classified in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin *et al*. 1979). Classifications were restricted to palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). Wetland boundaries were also flagged and marked in the field and each wetland area was photographed.

Each wetland and waterbody was further evaluated to characterize the hydrological connection to adjacent upland, wetland, and waterbody regions occurring in proximity to the survey area investigated. Specific methods for characterizing and evaluating the soils, vegetation, and hydrologic indicators are described below.

Vegetation: Dominant plant species in each major vegetation stratum (tree, sapling/shrub, herbaceous, and woody vine) were identified within 30-foot radius sample plots. The wetland indicator status of each species was assigned according to the *Eastern Mountains and Piedmont Regional Wetland Plant List* (Lichvar *et al.* 2016). Hydrophytic vegetation was determined to be present where more than 50 percent of the dominant species from all vegetation strata were classified as facultative (FAC), facultative wetland (FACW), or obligate wetland species (OBL). Other tests used to evaluate the dominance of hydrophytic species included the Dominance Test and the Prevalence Index (USACE 2012).

Soils: A soil auger was used at each sample plot to extract a core sample to a depth where either hydric indicators were observed, approximately 20 inches, or until rocky substrate resulted in auger refusal. The soils were characterized by determining the color and texture of each soil horizon. Soil matrix and mottle colors were identified using Munsell Soil Color Charts (Munsell Color 2012). Soils were considered hydric if they exhibited one (1) or more of the following indicators, including, but not limited to: histosols, histic epipedons, black histic, hydrogen sulfide, stratified layers, 2 cm muck, depletion below dark surface, thick dark surface, sandy mucky mineral, sandy gleyed matrix, sandy redox, stripped matrix, dark surface, polyvalue below surface, thin dark surface, loamy gleyed matrix, depleted matrix, redox dark surface, depleted dark surface, redox depressions, iron-manganese masses, umbric surface, Piedmont floodplain soils, and red parent material. These indicators support a hydric soil determination, although secondary or additional indicators may also be present.

Hydrology: Each sample plot was examined for evidence of wetland hydrology. Indicators of wetland hydrology include: surface water, high water table, saturations, water marks, sediment deposits, drift deposits, algal mat or crust, iron deposits, visible inundation on aerials, water stained leaves, aquatic fauna, true aquatic plants, hydrogen sulfide odor, oxidized rhizospheres on living roots, presence of reduced iron, recent iron reduction in tilled soils, or a thin muck surface. Presence of standing water or depth to soil saturation was recorded at each sampling location.

2.3 Waterbody Identification

Prior to field surveys, known waterbodies in the survey area were identified on USGS topographic quadrangle maps. During the field investigation, a qualified biologist examined the entire field survey area for mapped and unmapped waterbodies. Waterbodies identified included perennial, intermittent, and ephemeral streams and ponds. Data recorded included stream name, associated wetlands, flow regime (perennial, intermittent, or ephemeral), direction of flow, water width, bank-to-bank width, bank height and slope, water depth, bottom and bank substrates, observed water quality, channel meander, and adjacent vegetation type. In addition, indicators of aquatic habitat, wildlife use, and soil erosion potential were recorded.

2.4 GPS Mapping

Wetland and waterbody boundaries/alignments were flagged at regular intervals to accurately represent the boundary between the aquatic resource and the adjacent upland. Flag points were then land surveyed using a Trimble, Inc. (Sunnyvale, CA) Geo XH Global Positioning System (GPS). Each point used an identification code and was numbered consecutively to facilitate the desktop mapping process. Flag points were differentially corrected in accordance with Trimble, Inc. sub-meter accuracy standards. All data was recorded in the WGS 84 coordinate zone and then projected into NAD 83 State Plane Pennsylvania South using ArcGIS 10.2.

Attribute data for all flag points was recorded, including the following information:

- Unique number or name;
- NAD 1983 coordinates;
- Date;
- Time;
- Number of positions recorded;
- Max value position dilution of precision (PDOP); and,
- Horizontal accuracy (in meters)

GPS data were differentially corrected using Pathfinder Office 5.60 software (Trimble Inc., Sunnyvale, California) and commercial base station control points. Corrected flag points were then imported into ArcView 10.2 (ESRI; Redlands, California) Geographic Information System (GIS) mapping software where points were connected in consecutive order and according to surveyor notes. Wetland boundaries were left “open” when the wetland extended beyond the survey boundaries and were “closed” when contained entirely within the survey boundaries. Stream alignments were connected in a similar manner and designated as “line” data. A geo-referenced wetland delineation boundary suitable for overlay onto themed base layers was created using ArcView 10.2 GIS software. The same GIS software was also used as an analytical tool, providing acreages of the delineated wetlands and coordinate location of the centroids of the polygons.

3.0 Survey Results

3.1 Background Data Review

General Area Description
Land use within the survey boundary is rural and consists of cropland, maintained ROW, mowed fields and woodlots. Attachment A, Figure 1 provides an aerial basemap of the survey area.

Soils
A review of published and publicly available soils data for the survey area indicates that eight (8) soils series are mapped within the survey boundary (Attachment A, Figure 1). Mapped soil series are summarized in Table 1 below.

Table 1. Mapped Soil Types on Horse Valley Reroute

Soil Symbol	Soil Name and Brief Description[1]	Hydric Soil Classification
AbB	Albrights silt loam, 3 to 8 percent slopes	Partial
AoB	Andover very stony loam, 0 to 8 percent slopes	Hydric
Aw	Atkins silt loam	Hydric
BeC	Berks channery silt loam, 8 to 15 percent slopes	Partial
BhB	Berks channery silt loam, 3 to 8 percent slopes, very stony	Not hydric
BhD	Berks channery silt loam, 8 to 25 percent slopes, very stony	Not hydric
BrA	Brinkerton silt loam, 0 to 3 percent slopes	Hydric
BrB	Brinkerton silt loam, 3 to 8 percent slopes	Hydric

[1]USDA, NRCS, Soil Series Descriptions for Perry County, Pennsylvania, 2017.

Mapped Resources

Three (3) mapped USFWS NWI features were identified in the survey area, which consisted of two (3) riverine systems. Two riverine features are classified as a seasonally flooded, intermittent streambed with a Cowardin classification of R4SBC. The third feature is classified as a permanently flooded, unknown perennial with an unconsolidated bottom with a Cowardin classification of R5UBH (Cowardin et al 1979).

Mapped Waterbodies

One (1) intermittent waterbody is depicted on the USGS 7.5-minute series topographic quadrangle map (Blair Mills, PA, 1972).

3.2 Delineated Aquatic Resources

Two (2) new wetlands and four (4) new streams were identified during the field survey. Additionally, two (2) streams, one (1) pond, and one (1) wetland that were previously reported were extended through the new survey area.

Delineated Wetlands

The two newly delineated wetlands, wetlands W13r and W14r, were classified as palustrine emergent (PEM) and are summarized below in Table 2. Photos of each of these wetlands are provided in Attachment B, and data forms for each of these wetlands are provided in Attachment D.

Table 2. Wetlands Identified During Field Survey at Horse Valley Reroute

Wetland ID	Cover Class[1]	Hydrology Indicator[2]	Hydric Vegetation Indicator[2,3]	Hydric Soils Indicator[2]	Figure 2 Sheet	Photo Numbers	Description
W13r	PEM	A3, C3, B10, D5	DT	F3	2, 4	1, 2	Emergent wetland on an open southeast-sloping hillslope adjacent to streams S13r and S-Q68.
W14r	PEM	A3, C3, B10, D2, D5	DT	F3	2	3, 4	Emergent depression wetland adjacent to open agricultural field.

[1]Field classification based on Cowardin et al. 1979.
[2]Indicator codes from Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (V 2.0).
[3]RT = Rapid Test, DT = Dominance Test, PI = Prevalence Index.

Delineated Waterbodies

Previously-identified streams S-Q68 [Unnamed tributary (UNT) to Horse Valley Run], S-L4 (UNT to Horse Valley Run) and S-L6 (Horse Valley Run) were extended through the survey area from the initially reported

limits of each feature. There are no significant geometric or demographic changes to either of these waterbodies. Four (4) new streams were identified, of which, the flow regime of three (3) is classified as ephemeral (streams S12r, S13r and S15r) and one (1) is classified as intermittent (stream S14r). A brief summary of the newly identified streams and the extensions of existing streams is provided in Table 3 below. Photos of each stream are provided in Attachment C, and stream data forms are provided in Attachment D.

Table 3. Waterbodies Identified During Field Survey at Horse Valley Reroute

Stream ID	Flow Regime	Water Depth (in.)	Bankfull Width (ft.)	Figure 2 Sheet	Photo Numbers	Description
S-L4	Intermittent	1	10	5	11, 12	UNT to Horse Valley Run – extended approximately 0.07-mile to the east to connect with previous delineation. Northwest-flowing intermittent stream that has a confluence with Horse Valley Run (stream S-L4)
S-L6	Perennial	4	10	3, 4, 5	n/a	Horse Valley Run – extended approximately 0.08-mile northeast of the existing delineation during this field survey. Northeast-flowing perennial stream that has a confluence with UNT to Horse Valley Run (stream S-L4) north of the existing ROW
S-Q68	Perennial	12	5	2, 4	5, 6	UNT to Horse Valley Run – extended approximately 0.19-mile southeast of the existing delineation during this field survey. Southeast-flowing perennial stream that has a confluence with Horse Valley Run (stream S-L6) at the eastern boundary of wetland L2
S12r	Ephemeral	<1	1	1	1, 2	Ephemeral roadside drainage ditch that parallels Horse Valley Road and drains to wetland L2
S13r	Ephemeral	<1	1	2, 4	3, 4	Ephemeral drainage located on sloping field east of Horse Valley Road
S14r	Intermittent	<1	3	4	7, 8	East-flowing intermittent drainage that has a confluence with UNT to Horse Valley Ruin (stream S-Q68); receives hydrology from pond L2 and stream S13r
S15r	Ephemeral	<1	2	3, 5	9, 10	Northeast-flowing ephemeral drainage located at base of forested hillslope that has a confluence with Horse Valley Run (stream S-L6)

*Note that widths and depths are averages based on the assessed limits of the features

Delineated Ponds

Pond L2 was previously delineated during pre-construction surveys and was extended 170 feet north through the survey area. No new data was collected for this resource. Figure 2, Sheet 4 in Appendix A shows the new delineated limits of pond L2.

4.0 Summary

Tetra Tech completed an aquatic resource survey around the proposed Horse Valley Road reroute location, an approximately 43-acre area encompassing the proposed Horse Valley Road 16” Right-of Way (ROW) crossing, in Blairs Mills Township, Perry County, Pennsylvania. Tetra Tech identified two (2) wetlands and four (4) new streams that meet USACE criteria for aquatic resources. Additionally, five (5) previously known aquatic resources consisting of one (1) pond, one (1) wetland, and three (3) streams had their previously reported limits extended through the survey area. Attachment A provides figures regarding the site location and geometry and alignments of the delineated features. Attachments B and C provide photologs for each of the new resources delineated within the survey area, and Attachments D and E provide data forms for each of the features.

5.0 References

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31, Washington, D.C. 131 pp.

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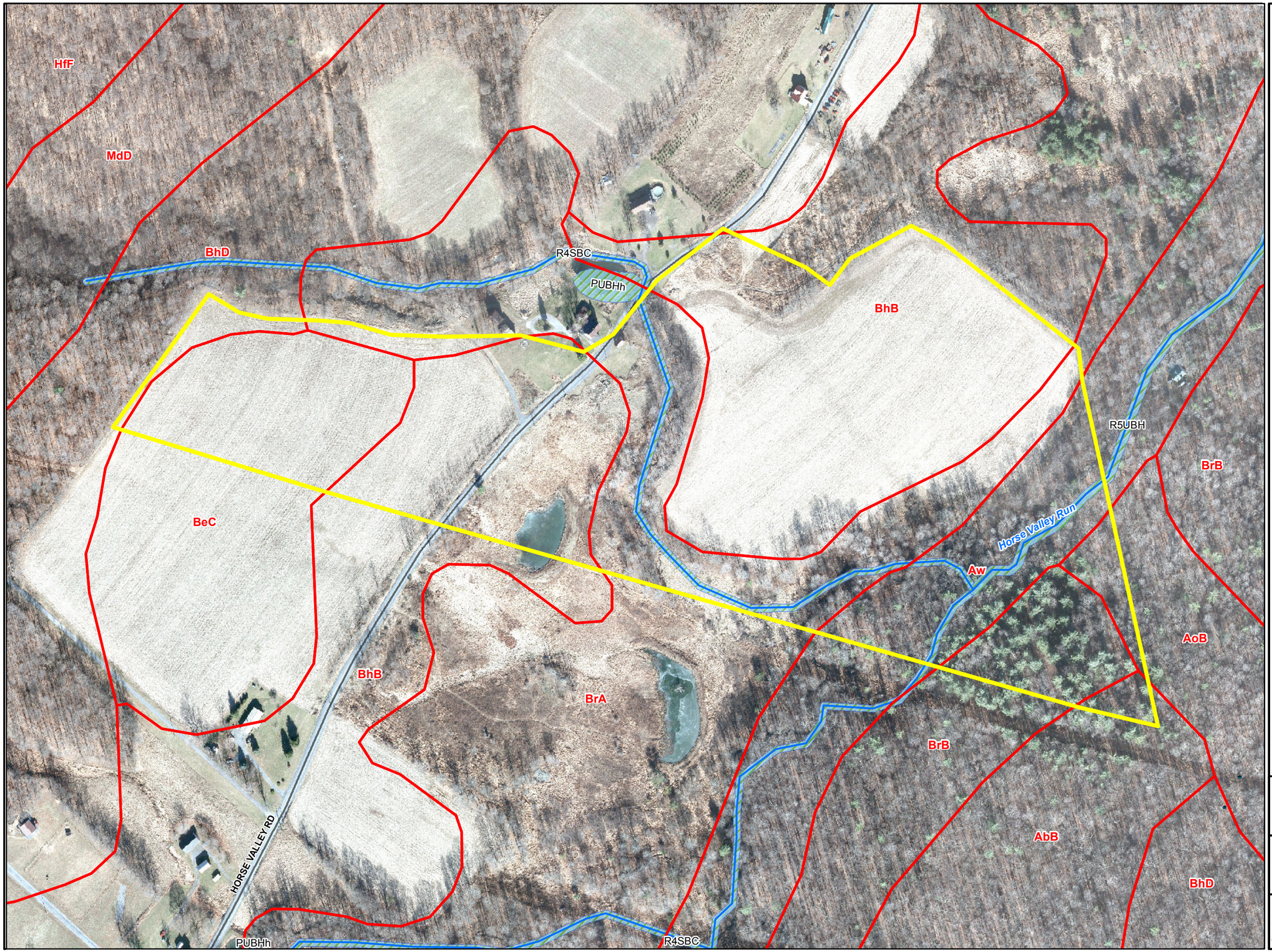
ATTACHMENT A

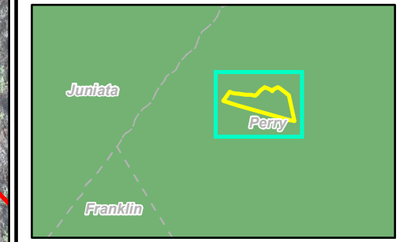
FIGURES



Legend

- Survey Area
- NWI Wetlands
- Soils
- NHD

Sheet Identifier



N

0 125 250 500

1 inch = 250 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Perry County, PA. Sheet1 of 1

Prepared By:	Date:
TETRA TECH	02/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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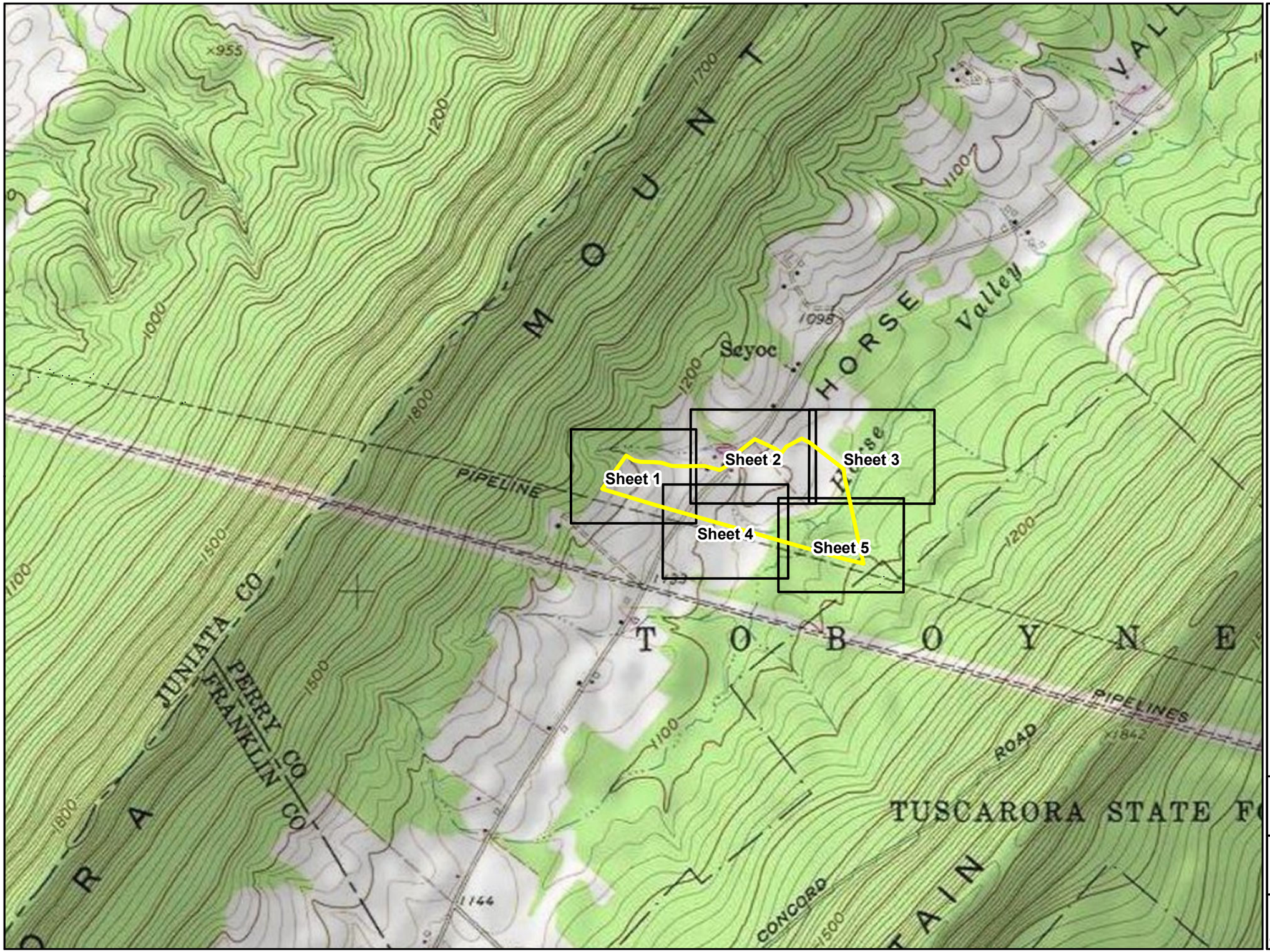

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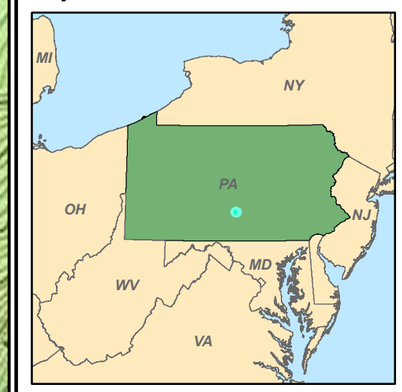
- Survey Area
- SheetBoundary

Project Location



N

0 500 1,000 2,000

1 inch = 1000 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Perry County, PA. Sheet Key

Prepared By:	Date:
TETRA TECH	02/2019

Base Map; ESRI US Topo Maps

Coordinate System: NAD 83 Stateplane, PA South, Feet

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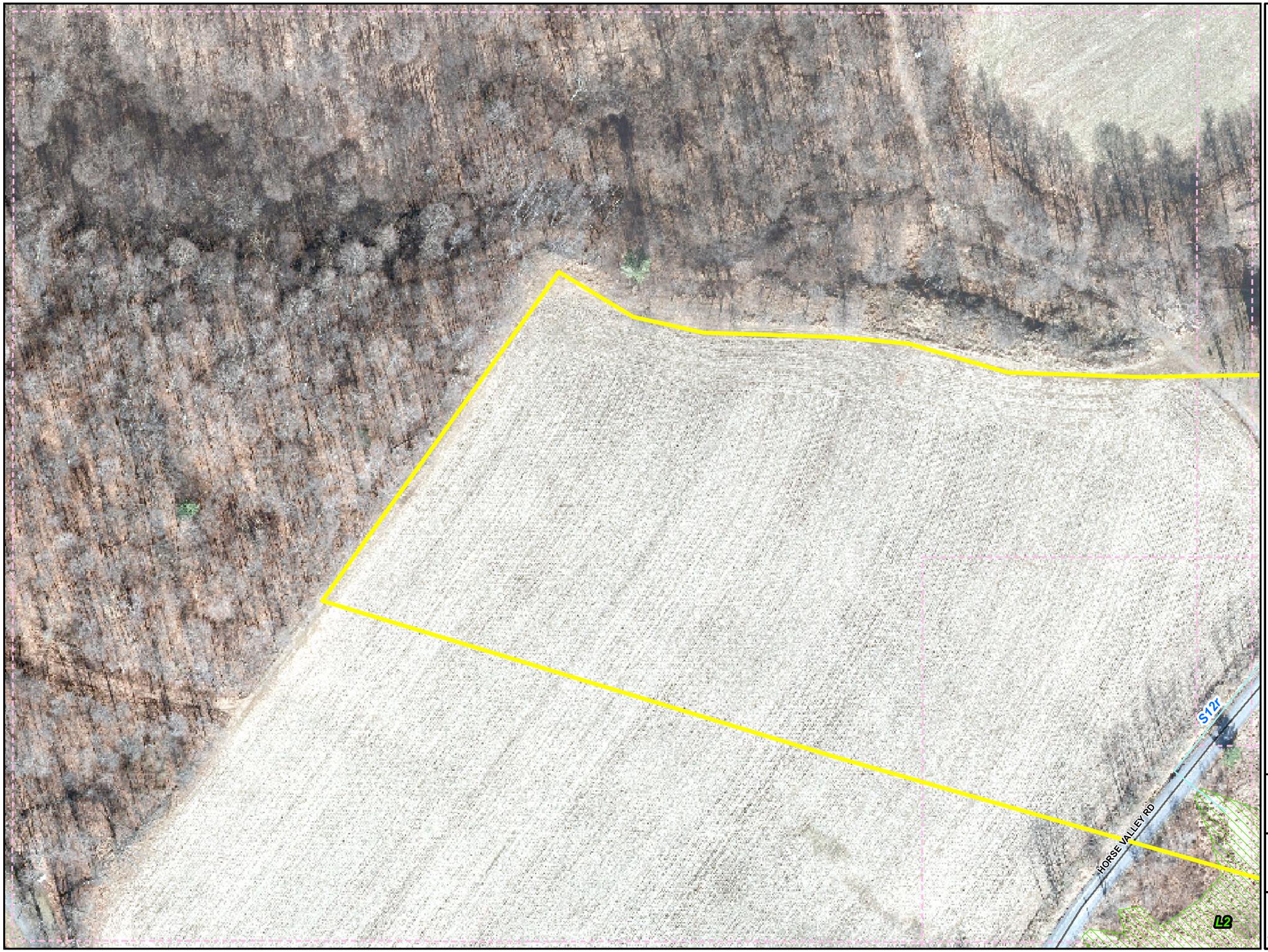
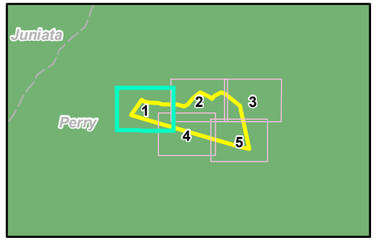


Legend

- Survey Area
- Ephemeral Stream
- PEM Wetland
- SheetBoundary

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Perry County, PA. Sheet 1 of 5

Prepared By:	Date:
TETRA TECH	02/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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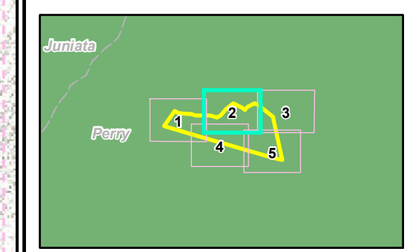
Legend

- Survey Area
- Ephemeral Stream
- Perennial Stream
- PEM Wetland
- SheetBoundary

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Perry County, PA. Sheet 2 of 5

Prepared By:	Date:
TETRA TECH	02/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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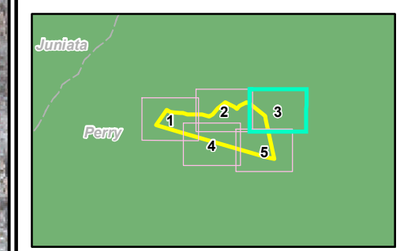
Legend

- Survey Area
- Ephemeral Stream
- Perennial Stream
- SheetBoundary

Sheet Identifier



N

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1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Perry County, PA. Sheet 3 of 5

Prepared By:	Date:
TETRA TECH	02/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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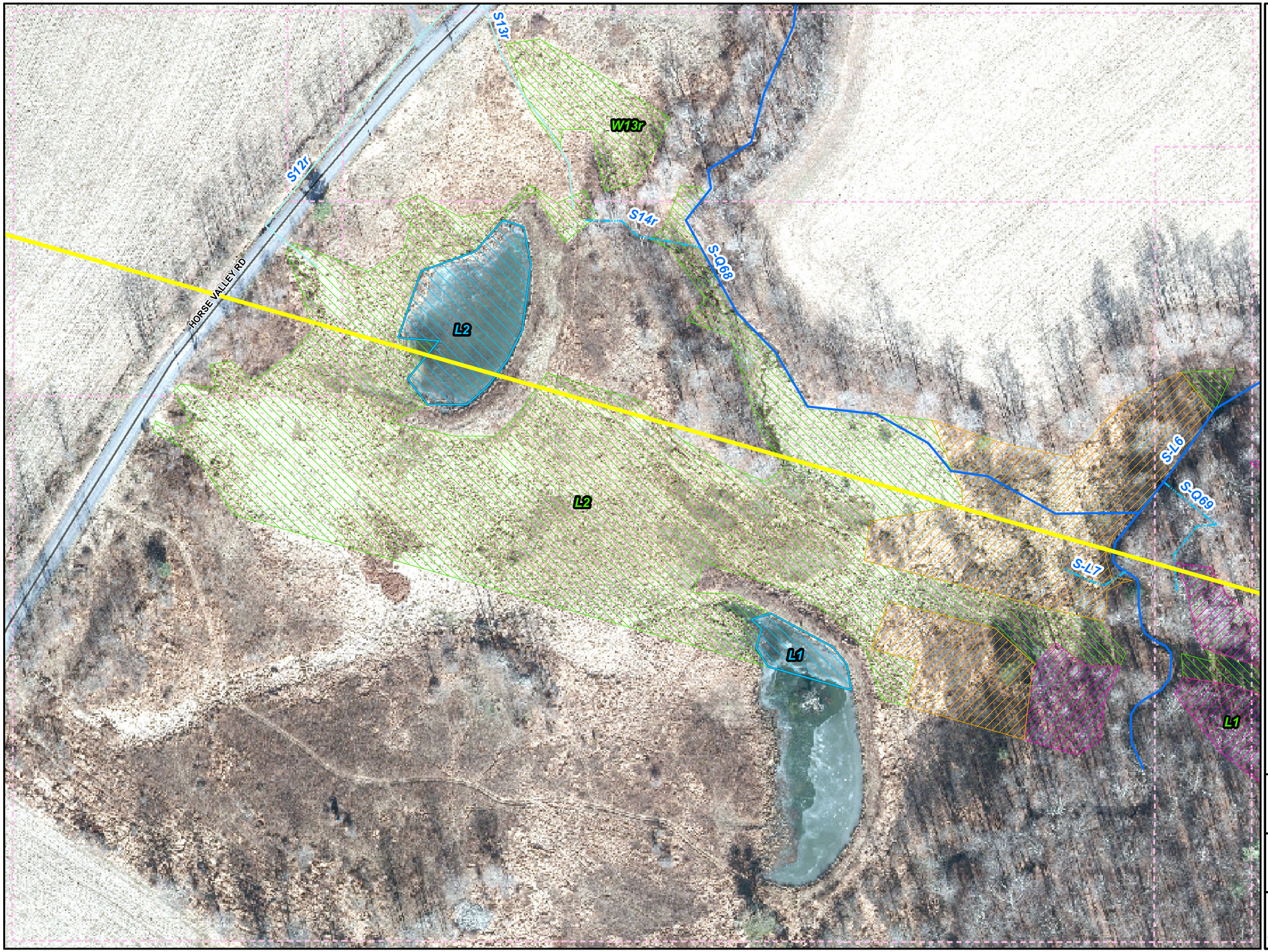
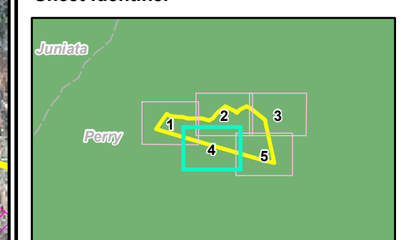


Legend

- Survey Area
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Pond
- SheetBoundary

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

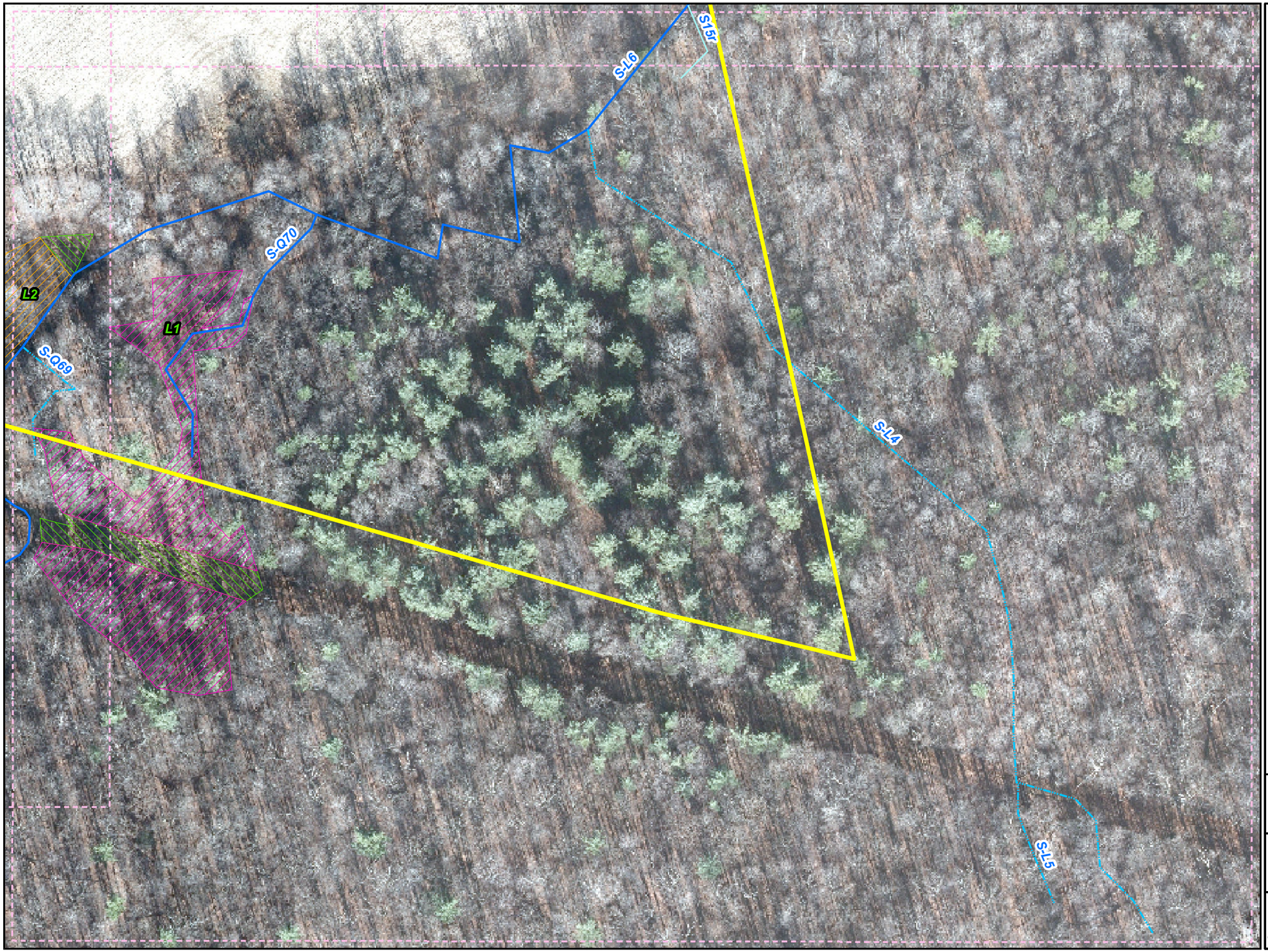
Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Perry County, PA. Sheet 4 of 5

Prepared By:	Date:
TETRA TECH	02/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

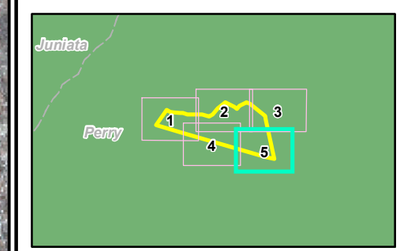
P:\GIS\projects\112C05958-PPP\MXD\Permits\PermitMods\WDR_FEMA_Maps\HorseValleyWDRFigure2.mxd JL



Legend

- Survey Area
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- SheetBoundary

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Perry County, PA. Sheet 5 of 5

Prepared By: TETRA TECH

Date: 02/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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ATTACHMENT B

WETLAND PHOTOGRAPHIC LOG

WETLAND PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 1

Direction: East

Comments: Wetland W13r – wetland sampling point

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 2

Direction: West

Comments: Wetland W13r – upland sampling point

WETLAND PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 3

Direction: Southeast

Comments: Wetland W14r – wetland sampling point

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 4

Direction: East

Comments: Wetland W14r – upland sampling point

ATTACHMENT C

WATERBODY PHOTOGRAPHIC LOG

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend
Date: 1/29/2019
Photo No.: 1
Direction: South

Comments: Stream S-12r, downstream view facing south

Photographer: K. Berend
Date: 1/29/2019
Photo No.: 2
Direction: North

Comments: Stream S-12r, upstream view facing north

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 3

Direction: Southeast

Comments: Stream S13r, downstream view facing southeast

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 4

Direction: Northwest

Comments: Stream S13r, upstream view facing northwest

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 5

Direction: Northwest

Comments: Stream S-Q68 extension, upstream view facing northwest

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 6

Direction: Southeast

Comments: Stream S-Q68 extension, downstream view facing southeast

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend
Date: 1/29/2019
Photo No.: 7
Direction: West

Comments: Stream S14r, upstream view facing west

Photographer: K. Berend
Date: 1/29/2019
Photo No.: 8
Direction: East

Comments: Stream S14r, downstream view facing east

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 9

Direction: Southwest

Comments: Stream S15r, upstream view facing southwest

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 10

Direction: North

Comments: Stream S15r, downstream view facing north

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Horse Valley Re-route

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 11

Direction: East

Comments: Stream S-L4 extension, upstream view facing east

Photographer: K. Berend

Date: 1/29/2019

Photo No.: 12

Direction: West

Comments: Stream S-L4 extension, downstream view facing west

ATTACHMENT D

WETLAND DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

..e: PPP/Horse Valley City/County: Perry Sampling Date: 1/29/19

..plicant/Owner: SPLP State: PA Sampling Point: L2 ext 1 - WET

Investigator(s): Geuinon / Berend Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope/meadow Local relief (concave, convex, none): concave Slope (%): 5-10

Subregion (LRR or MLRA): LRR S Lat: 40.2942 Long: -77.6533 Datum: WGS84

Soil Map Unit Name: BhB- Berks channery silt loam, 3-8% slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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)
- X 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 (B8)
- 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes X	No _____	Depth (inches): -8
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 (Four Strata) – Use scientific names of plants.

Sampling Point: L2ext - WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	30	X	FACW
2. Juncus effusus	20	X	FACW
3. Typha latifolia	10		OBL
4. Microstegium vimineum	15		FAC
5. Carex vulpinoidea	10		OBL
6.			
7.			
8.			
9.			
10.			
11.			
	86 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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:		Multiply by:
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[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 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 vine – 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: L2ext1-1

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[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 4/2	80	10YR 4/6	20	C	M	Si/CL	
4-8	2.5Y 3/2	80	10YR 4/6	20	C	M	Si/CL	
8-12	5Y 4/1	60	7.5YR 5/8	40	RM	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- X Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (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 Surface (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)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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: PPP/Horse Valley City/County: Perry Sampling Date: 1/29/19

Applicant/Owner: SPLP State: PA Sampling Point: L2cxt - UR

Investigator(s): Guiman / Berend Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 5-10

Subregion (LRR or MLRA): LRR S Lat: 40.2443 Long: -77.6534 Datum: WGS84

Soil Map Unit Name: BhB - Berks channery silt loam, 3-8% slopes, very stony NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ 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 _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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 (B8)
- ___ 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 _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: L2ext - wet

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Herb Stratum (Plot size: 5)			
1. Solidago canadensis	40	X	FACW
2. Dispacus Fullonum	30	X	FACW
3. Rubus spp.	10		ND
4. Berberis thunbergii	2		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	82 = Total Cover		
50% of total cover: 41	20% of total cover: 16.4		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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: — (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
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[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 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 vine – 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: L2ext1-UPL

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[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 4/3	100					Gr S	
8+								Refusal

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (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 Surface (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)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Coarse gravel

Depth (inches): 8

Hydric Soil Present? Yes ___ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: PPP / Horse Valley City/County: Perry Co. Sampling Date: 1/29/19

Applicant/Owner: SPLP State: PA Sampling Point: W13-WET

Investigator(s): Gaunen / Berend Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 5-10

Subregion (LRR or MLRA): LRR R Lat: 40.2945 Long: -77.6578 Datum: WGS84

Soil Map Unit Name: BhB - Berks channery silt loam, 3-8% slopes, Very stony NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes X** **No _____**
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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 (B8)
- 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes X	No _____	Depth (inches): -7"
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 (Four Strata) – Use scientific names of plants. Sampling Point: W13-WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Herb Stratum (Plot size: 5')			
1. Microstegium viminaum	80	X	FAC
2. Onoclea sensibilis	10		FACW
3. Solidago rugosa	5		FAC
4. Verbena hastata	2		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	97 = Total Cover		
50% of total cover: 48.5	20% of total cover: 19.4		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
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[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 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 vine – 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 WET

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[1]	Loc[2]	Texture	Remarks
0-7	10 YR 3/2	95	7.5 YR 4/6	5	C	M	SiCL	
7-10	10 YR 3/2	85	7.5 YR 4/6	15	C	M	SiCL	
10-16	5 Y 5/2	60	7.5 YR 5/6	40	RM	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (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 Surface (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)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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: PPP/Horse Valley City/County: Perry Sampling Date: 1/29/19

Applicant/Owner: SPLP State: PA Sampling Point: W13-UA

Investigator(s): Guinan/Bernard Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5-10

Subregion (LRR or MLRA): LRR S Lat: 40.2943 Long: -77.6525 Datum: WGS84

Soil Map Unit Name: BhB - Berks channery silt loam, 3-8% slopes, very stony NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ 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 _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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 (B8)
- ___ 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 _____	No X	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W13p UPL

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Herb Stratum (Plot size: 5)			
1. Solidago canadensis	30	X	FACU
2. Dispaseus Fullonum	30	X	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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: — (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
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[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 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 vine – 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: W13r - UPL

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[1]	Loc[2]	Texture	Remarks
0-7	10 YR 4/3	100					Gr/S.	
7+								Coarse gravel refusal

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (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 Surface (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)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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: PPP / Horse Valley City/County: Perry Sampling Date: 1/29/19

Applicant/Owner: SPLP State: PA Sampling Point: W14c - WET

Investigator(s): Guinan / Berend Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR S Lat: 40.2957 Long: -77.6508 Datum: WGS84

Soil Map Unit Name: BhB - Berks channery silt loam, 3-8% slopes, very stony NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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 (B8)
- 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): -7
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? **Yes** _____ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W14r - WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Herb Stratum (Plot size: 5)			
1. Microstegium vimineum	40	X	FAC
2. Juncus effusus	40	X	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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:		Multiply by:
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[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 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 vine – 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: W14r. WET

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[1]	Loc[2]	Texture	Remarks
0-7	2.5 Y 3/1	90	10 YR 5/6	10	C	M	Si/CL	
7-12	2.5 Y 3/2	70	10 YR 5/8	10	C	M	Si/CL	
			10 YR 5/1	20	D	M	Si/CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (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 Surface (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)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]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: PPR / Horse Valley City/County: Perry Sampling Date: 1/29/19

Applicant/Owner: SPLP State: PA Sampling Point: WHr - WPL

Investigator(s): Guiman / Bernard Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Ag Field Local relief (concave, convex, none): convex Slope (%): 5-10

Subregion (LRR or MLRA): LRR S Lat: 40.29455 Long: -77.6511 Datum: WGS84

Soil Map Unit Name: BhB - Berks channery silt loam, 3-8 % slopes, very stony NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ 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 _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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 (B8)
- ___ 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 _____	No X	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W14r - UPL

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Herb Stratum (Plot size: _____)			
1. Dispasscus fulvum	5	X	FACU
2. Asclepias syriaca	2		FACU
3. unknown spp.	10	X	ND
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	17 = Total Cover		
50% of total cover: 8.5	20% of total cover: 3.4		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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: — (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
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[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 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 vine – 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: W14r - UPL

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[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100					Gr/s:	10% coarse gravel
6"+								refusal

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (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 Surface (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)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 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)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? Yes ___ No X

Remarks:

Ag field - disturbed soils from tilling

ATTACHMENT E

STREAM DATA FORMS

Tetra Tech Stream Data Sheet

Surveyors: K. Berend & M. Guman Date: 1/29/19 Resource ID Number: S12r
Project: SPLP – PPP State: PA County: Perry
Photo Number (s): 0465–0466 Canopy Cover: 0 %

Flow Direction: S **Bank Width:** 1 feet **Water Width:** 1 feet
High Water Depth: 0.5 feet **Water Depth:** 0.5 feet **Turbidity:** n/a

Flow Regime: [ ] Perennial [ ] Intermittent [ ] Ephemeral [✓] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[✓] Low
[ ] Medium
[ ] High

Features:
[ ] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[ ] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [✓] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[✓] Cobble/Gravel 20%
[ ] Sand ___%
[✓] Silt/Clay 30%
[✓] Organic 50%

Bank Substrate:
Height: Left 1 ft Right 1 ft.

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[ ]	Gravel	[ ]
[ ]	Sand	[ ]
[ ]	Silt/Clay	[ ]
[✓]	Organic	[ ]

Floodplain Width:

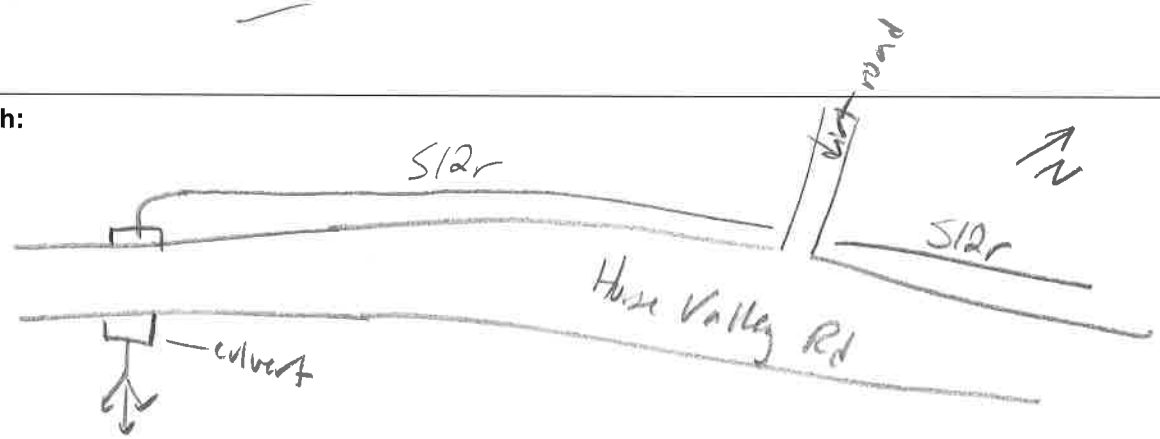
Left		Right
[✓]	<10 feet	[✓]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[ ] Forested
Species: —
[ ] Shrub
Species: —
[✓] Herbaceous
Species: grass

Wildlife Observed/Notes:

—

Sketch:



Tetra Tech Stream Data Sheet

Surveyors: K. Berard + M. Guikon Date: 1/09/19 Resource ID Number: S13r
Project: SPLP - PPP State: PA County: Perry
Photo Number (s): 0473, 0474 Canopy Cover: 0 %

Flow Direction: SE **Bank Width:** 1 feet **Water Width:** 1 feet
High Water Depth: _____ feet **Water Depth:** 0 feet **Turbidity:** _____

Flow Regime: [ ] Perennial [ ] Intermittent [✓] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[✓] Low
[ ] Medium
[ ] High

Features:
[ ] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[ ] Pools [ ] Gravel Bar [✓] Braided
[ ] Rapids [ ] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[ ] Cobble/Gravel ___%
[ ] Sand ___%
[ ] Silt/Clay ___%
[✓] Organic 100 %

Bank Substrate:
Height: Left 6" Right 6"

[ ] Bedrock	[ ]
[ ] Boulder	[ ]
[ ] Gravel	[ ]
[ ] Sand	[ ]
[ ] Silt/Clay	[ ]
[✓] Organic	[✓]

Floodplain Width:

Left		Right
[ ]	<10 feet	[ ]
[ ]	<25 feet	[ ]
[✓]	<50 feet	[✓]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[ ] Forested
Species: —
[ ] Shrub
Species: —
[ ] Herbaceous
Species: (see W13r data sheet)

Wildlife Observed/Notes:

Sketch:

Tetra Tech Stream Data Sheet

Surveyors: K. Berend + M. Gunnan Date: 1/29/19 Resource ID Number: S-Q68 ext
Project: SPLP- PPP State: PA County: Perry
Photo Number (s): 0477, 0478 Canopy Cover: 50 %

Flow Direction: SE **Bank Width:** 5 feet **Water Width:** 5 feet
High Water Depth: _____ feet **Water Depth:** 1 feet **Turbidity:** slight

Flow Regime: [✓] Perennial [ ] Intermittent [ ] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[ ] Low
[✓] Medium
[ ] High

Features:
[✓] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[✓] Pools [✓] Gravel Bar [✓] Braided
[ ] Rapids [✓] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[✓] Boulder 10 %
[✓] Cobble/Gravel 75%
[✓] Sand 15 %
[ ] Silt/Clay ___%
[ ] Organic ___%

Bank Substrate:
Height: Left 1 ft Right 1 ft.

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[ ]	Gravel	[ ]
[ ]	Sand	[ ]
[ ]	Silt/Clay	[ ]
[✓]	Organic	[✓]

Floodplain Width:

Left		Right
[ ]	<10 feet	[ ]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[✓]	<100 feet	[✓]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[✓] Forested
Species: Am Beech, Red oak
[ ] Shrub
Species: _____
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

Tetra Tech Stream Data Sheet

Surveyors: K. Berend + M. Guman Date: 1/24/19 Resource ID Number: S14r
Project: SPLP-PPP State: PA County: Perry
Photo Number (s): 0480, 0481 Canopy Cover: 60 %

Flow Direction: E **Bank Width:** 3 feet **Water Width:** 1 feet
High Water Depth: _____ feet **Water Depth:** 0.5 feet **Turbidity:** _____

Flow Regime: [ ] Perennial [✓] Intermittent [ ] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[ ] Low
[✓] Medium
[ ] High

Features:
[ ] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[✓] Pools [ ] Gravel Bar [ ] Braided
[✓] Rapids [ ] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[✓] Boulder 15 %
[✓] Cobble/Gravel 70 %
[✓] Sand 15 %
[ ] Silt/Clay ___%
[ ] Organic ___%

Bank Substrate:
Height: Left 2' Right 2'

	Left	Right
Bedrock	[ ]	[ ]
Boulder	[ ]	[ ]
Gravel	[✓]	[✓]
Sand	[ ]	[ ]
Silt/Clay	[ ]	[ ]
Organic	[✓]	[✓]

Floodplain Width:

Left		Right
[ ]	<10 feet	[ ]
[✓]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[✓] Forested
Species: Am. beech, red oak, sugar maple
[ ] Shrub
Species: _____
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

Tetra Tech Stream Data Sheet

Surveyors: K. Berend & M. Gurman Date: 1/24/19 Resource ID Number: S15r
Project: SPLP- PPP State: PA County: Perry
Photo Number (s): 0485, 0486 Canopy Cover: 50 %

Flow Direction: N **Bank Width:** 2 feet **Water Width:** 2 feet
High Water Depth: _____ feet **Water Depth:** 0 feet **Turbidity:** slight

Flow Regime: [ ] Perennial [ ] Intermittent [✓] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[✓] Low
[ ] Medium
[ ] High

Features:
[ ] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[✓] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [✓] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[✓] Cobble/Gravel 40 %
[ ] Sand ___%
[ ] Silt/Clay ___%
[✓] Organic 60 %

Bank Substrate:
Height: Left 1' Right 1'

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[✓]	Gravel	[✓]
[ ]	Sand	[ ]
[ ]	Silt/Clay	[ ]
[✓]	Organic	[✓]

Floodplain Width:

Left		Right
[ ]	<10 feet	[ ]
[ ]	<25 feet	[ ]
[✓]	<50 feet	[✓]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[✓] Forested
Species: Am. beech, E. hemlock
[ ] Shrub
Species: _____
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

Tetra Tech Stream Data Sheet

Surveyors: K. Berend + M. Gunan Date: 1/29/19 Resource ID Number: S-L4 ext
Project: SPLP-PPP State: PA County: Perry
Photo Number (s): _____ Canopy Cover: _____%

Flow Direction: W **Bank Width:** 10 feet **Water Width:** 3 feet
High Water Depth: _____ feet **Water Depth:** 1 feet **Turbidity:** Slight

Flow Regime: [✓] Perennial [ ] Intermittent [ ] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[ ] Low
[ ] Medium
[✓] High

Features:
[✓] Riffles
[✓] Pools
[ ] Rapids
[✓] Sand/Mud Bar
[✓] Gravel Bar
[✓] Aquatic Vegetation
[ ] Run/Glide
[ ] Braided
[ ] Other _____

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[✓] Cobble/Gravel 50 %
[✓] Sand 40 %
[ ] Silt/Clay ___%
[✓] Organic 10 %

Bank Substrate:
Height: Left 1' Right 1'

	Left	Right
Bedrock	[ ]	[ ]
Boulder	[ ]	[ ]
Gravel	[✓]	[✓]
Sand	[✓]	[✓]
Silt/Clay	[ ]	[ ]
Organic	[✓]	[✓]

Floodplain Width:

Left		Right
[ ]	<10 feet	[ ]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[✓]	>100 feet	[✓]

Dominant Vegetation:
[✓] Forested
Species: Am. beech, Red oak, Sugar Maple
[ ] Shrub
Species: _____
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch: