Erosion and Sediment Control Plan

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

November 2016

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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
Pls	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 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). 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 1,692 acres. Acres disturbed by county will be as follows: Blair County with 230 acres disturbed, Huntingdon County with 270 acres disturbed, Juniata County with 31 acres disturbed, Perry County with 118 acres disturbed, Cumberland County with 306 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 239 acres disturbed.

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. 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. 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. 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). Appropriately sized silt fence is an approved alternative in areas that are not special protection watersheds and must conform to the chart and details provided on plan sheet ES-0.06 or ES-0.07 (county dependent).

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 silt fence 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. Any area that used stone and/or timber mats for temporary stabilization and/or access will be completely removed, soil will be de-compacted by using tracked equipment making multiple passes over area reestablish preconstruction contours, and replace topsoil to a minimum of 4-8inches deep and seed and mulch areas vehicular traffic 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.

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:

Conventional bores

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.

- Silt Fence - This temporary sedimentation control measure will be installed at existing level grade. Both ends of each fence section will be extended at least 8 feet upslope across undisturbed ground at 45 degrees to the main fence alignment to allow for pooling of water. A 6-inch deep trench will be excavated, minimizing the disturbance on the downslope side. The bottom of the trench will be at level grade. Silt fence will be sized using the PADEP Construction Detail provided in Attachment 4. Silt fence will not be used in drainage areas with HQ and EV waters – See Compost Filter Socks.

- 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. 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

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

RECOMMENDED SEED MIXTURES			
MIXTURE NO.	**SPECIES**	**SEEDING RATES – PLS (1)**	
		MOST SITES	ADVERSE SITES
	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
	birdsfoot trefoil	6	10
12(8)	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. 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.

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

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)		
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

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. Any area where stone and/or timber mats are used for temporary stabilization, soil will be decompacted through multiple passes using tracked equipment to roughen the surface. The tracking method can be used elsewhere to aid in the decompaction of soils as deemed necessary to facilitate successful restoration. This tracking method can be used on the subsoil before

topsoil replacement and/or on the topsoil prior to seeding. 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 any area that used stone and/or timber mats for temporary stabilization and/or access will be completely removed, soil will be decompacted by using tracked equipment making multiple passes over area, reestablish preconstruction contours, and replace topsoil to a minimum of 4-8 inches deep and seed and mulch areas. Vehicular traffic 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.

At locations where the addition/creation of a permanent compacted aggregate surface is proposed, An infiltration berm, infiltration trench, slow release bmp and/or soil amendments will be implemented as a PCSM BMP to mitigate associated increases in runoff volume. No thermal impacts from aggregate surfaces are anticipated as the infiltration berms or soil ammendments will capture runoff and allow infiltration time prior to downstream discharge, thereby mitigating any possible thermal impact which may exist. Thermal impacts associated with gravel areas are not anticipated as a result of subsurface infiltration.

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 LOD will be restored to a meadow in good condition. As a result of restoring the pipeline ROW and associated workspaces 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.

The permanent access roads and block valve sites proposed for Spreads 3, 4, and 5 will remain as permanent gravel drives and pads after construction is complete. A minimal increase in runoff volume and rate occurs as a result of the additional gravel to be installed. Stormwater runoff calculations have been provided in Attachment 4 of the Pennsylvania Pipeline Project Site Restoration and PCSM Plan. The PCSM calculations show that the minimal increase in runoff volume and rate will be accounted for providing an infiltration berm and/or infiltration trench downslope of the runoff from the access road and pad areas. The infiltration berm, trenches, slow release bmp's, and soil amendments will be constructed in accordance with the PA Stormwater BMP Manual. Following implementation of the infiltration berm there will be no increase in the 2-year 24-hour runoff volume or the stormwater runoff rate for the 24-hour 2-, 10-, 50-, and 100-year storm events.

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 and Silt Fence

- Accumulated sediment will be removed as required, and in all cases where uniform accumulations are half the above ground height of the filter sock/silt fence. Any accumulated earth behind the filter sock/silt fence 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/silt fence installation will be inspected weekly and after every runoff event. Loosened support stakes will be removed and new stakes driven. Filter socks/silt fence 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

Portions of the earth disturbance activities associated with the SPPP will be located within a HQ/EV 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 HQ/EV special protection watersheds 25 Code §§102.8 (h) was followed, for all the 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.

In Berks County numerous EV wetlands are located within the project boundary. All of these wetlands underwent a combination of non-discharge alternative analysis and the use of ABACT BMP's onsite. These measures are discussed in more detail below. Table 1 lists all of the receiving waters for the project boundary.

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 grade is restored therefore 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. 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 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. A supplemental Antidegredation Analysis is provided in Attachment 11 of this report.

The following ABACT E&S BMPs will be used onsite:

- Wash racks located at rock construction entrances,
- Compost filter sock used in place of silt fence,
- 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

A combination of surface water sources (SWSs) and public water sources (PWSs) will be used to provide the water required for an HDD, hydrostatically testing pipeline segments installed by HDD, and hydrostatically testing the main pipeline. The pipelines were broken into 6 spreads for construction purposes. Before being put into service, the 20-inch and 16-inch pipelines in PPP will be hydrostatically tested. Any segments of the pipeline that will be installed within a spread by HDD will be tested during the installation process. Subsequently, once the entire pipeline has been installed within a spread, the full pipeline will be hydrostatically tested.

The pipelines will be installed across the following counties in the South Central Region (Construction Spreads 3, 4, and 5): Blair, Huntingdon, Juniata, Perry, Cumberland, York, Dauphin, Lebanon Lancaster, and Berks. The regulatory agencies that control the withdrawal and discharge of water for hydrostatic testing varies by county and includes Pennsylvania Department of Environmental Protection (PADEP), Susquehanna River Basin Commission (SRBC), and Delaware River Basin Commission (DRBC).

A preliminary assessment of the water needed for both the HDDs and mainline tests was completed using estimated pipeline lengths and pipeline diameters. The estimated water volumes were subsequently used to determine if local PWSs and/or SWSs could provide the required quantities of water. Potential PWSs were contacted to determine available allocations, contact information, pricing, type of water available (raw or treated), potential withdrawal points, and contract information. This information was consolidated into spread-specific lists that were provided to the construction contractors for their discretionary use. PWSs will need to be used for certain portions of spreads because of the lack of viable SWSs, but in other spreads, SWSs will be primarily used because they are located in close proximity, minimal to no trucking is required, and the overall costs associated with use of SWSs is much lower than water from PWSs. The construction contractors are required to coordinate with the PWSs to finalize contracts and other issues if PWS will be used for hydrostatic testing.

A total of 12 SWSs were determined to be viable for supplying water for HDD drilling, HDD hydrostatic testing, and mainline testing (provide in Table 2) in the South Central Region. Water withdrawals from the 12 SWSs will utilize temporary equipment to avoid the need for PADEP GP-4s for the 12 SWSs. The temporary pumps and associated equipment (other than hose and intake screen) will be located outside of the 100-year floodway, with the exception of Swatara Creek. Temporary hosing and intake screens will be removed from the floodway when not in use. No dredging or filling activities will be completed within the 100-year floodway without additional permits. Water withdrawal activities will be conducted in compliance with all other permits obtained for the project under PADEP Chapter 102, 105, and 106. In addition, if on average, more than 10,000 gallons per day are withdrawn from a SWS over a 30-day period, the withdrawal will need to be registered under PADEP Chapter 110/Act 220 and the withdrawal rate metered and reported to PADEP.

All 12 of the sources in the South Central Region are located within SRBC territory. In general, any water sourced from within the SRBC territory must stay within the SRBC territory (i.e., no inter-basin transfer). SRBC boundaries were depicted on project mapping. The proposed withdrawal rates for five of the SWSs trigger the need for SRBC Surface Water Withdrawal permits (i.e., average of 100,000 gpd or greater over a 30-day period). Surface Water Withdrawal Permit applications for Frankstown Branch Juniata River, Conodoguinet Creek, Tuscarora Creek, Susquehanna River, and Swatara Creek were submitted to SRBC. All water withdrawal activities from these 5 sources will need to be completed in compliance with the approved SRBC dockets. For the remaining seven SRBC SWSs that do not require permitting, surface water withdrawals must be properly metered to document that water withdrawals are below the SRBC withdrawal requirements. Consumptive use of water from the 12 SWSs for drilling was estimated to be less than the limits that would trigger the need for SRBC Consumptive Use Permits (i.e., 20,000 gpd over a 30-day period) and therefore no permit applications were submitted to SRBC. Consumptive use of the surface water will need to be properly metered to document that the use rate is below the SRBC withdrawal requirement. Because no consumptive use permits were obtained and the consumptive use permit rate trigger cannot be exceeded, supplemental water from PWSs may be needed to complete the drilling.

Based on a docket agreement between Sunoco and DRBC, only PWSs are allowed to be used to complete drilling and hydrostatic testing of the HDDs and pipeline in DRBC territory. A list of available PWSs was developed and provided to the construction contractors.

Any drilling fluid from HDDs will be collected, containerized, and properly disposed of at an approved disposal facility. Water discharged at the completion of hydrostatic testing of HDDs or main pipeline can be discharged to the ground surface or directly back to the source water according to the approved PADEP NPDES/PAG-10 permit. The permits require sampling and analysis of the water, and possibly pretreatment of the water, prior to discharge. PAG-10 permits were obtained for non-SRBC and SRBC areas of the PPP. As discussed above, the same docket agreement between Sunoco and DRBC excludes any surface discharges within DRBC territory. All hydrostatic test water in DRBC territory will be collected, transported, and disposed of under Sunoco's Industrial Discharge Permit with the Delaware County Regional Water Quality Control Authority (DELCORA). The water will need to meet pretreatment limits before being discharge to DELCORA at Sunoco's Marcus Hook facility.

Water Withdraw Details are presented in Attachment 8.

Table 2. Surface Water Withdrawal Sources

Surface Water Source	**County**
Frankstown Branch Juniata River (2)	Blair
Frankstown Branch Juniata River (3)	Blair
Aughwick Creek	Huntingdon
George Creek	Huntingdon
Tuscarora Creek	Juniata
Locust Creek	Cumberland
UNT to Locust Creek	Cumberland
Conodoguinet Creek	Cumberland
Letort Spring Run	Cumberland
Susquehanna River	Dauphin
Swatara Creek	Dauphin
Snitz Creek	Lebanon

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.

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.

Cassville, Entriken, Huntingdon, Williamsburg, Butler Knob, Aughwick, and Blairs Mills Quadrangles, Pennsylvania – Huntingdon County, Geological Survey, United States Department of Interior.

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

Blairs Mills Quadrangle, Pennsylvania – Juniata County, Geological Survey, United States Department of Interior.

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

Blain, Blairs Mills, Andersonburg, Newburg, and Newville Quadrangles, Pennsylvania – Perry County, Geological Survey, United States Department of Interior.

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

Andersonburg, Newville, Landisburg, Plainfield, Carlisle, Shermans Dale, Mechanicsburg, Wetzville, and Lemoyne Quadrangles, Pennsylvania – Cumberland County, Geological Survey, United States Department of Interior.

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

Lemoyne and Steelton Quadrangles, Pennsylvania – York County, Geological Survey, United States Department of Interior.

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

Middletown, Steelton, Elizabethtown, Hershey, and Palmyra Quadrangles, Pennsylvania – Dauphin County, Geological Survey, United States Department of Interior.

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

Elizabethtown, Lebanon, Palmyra, Richland, and Womelsdorf Quadrangles, Pennsylvania – Lebanon County, Geological Survey, United States Department of Interior.

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

Sinking Spring and Womelsdorf Quadrangles, Pennsylvania – Lancaster County, Geological Survey, United States Department of Interior.

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

Reading, Sinking Spring, Morgantown, Terre Hill, Elverson, and Washington Quadrangles, Pennsylvania – Berks County, Geological Survey, United States Department of Interior.

Soil Survey of Berks 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	Siltation Impaired
UNT to Blair Run (5)	Blair	Juniata	COLD WATER FISHES	CWF	No
Blair Run	Blair	Juniata	COLD WATER FISHES	CWF	No
UNT to Poplar Run (1)	Blair	Juniata	COLD WATER FISHES	CWF	No
Dry Run (2)	Blair	Juniata	WARM WATER FISHES	WWF	No
UNT to Dry Run (20)	Blair	Juniata	WARM WATER FISHES	WWF	No
UNT to Blair Gap Run (1)	Blair	Juniata	TROUT STOCKING	TSF	No
UNT to Beaverdam Branch (3)	Blair	Blair	WARM WATER FISHES	WWF	No
UNT to Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No
UNT to Frankstown Branch Juniata River (15)	Blair	Blair	WARM WATER FISHES	WWF	No
Frankstown Branch Juniata River (2)	Blair	Blair	WARM WATER FISHES	WWF	No
UNT to Frankstown Branch Juniata River (2)	Blair	Frankstown	WARM WATER FISHES	WWF	No
UNT to Oldtown Run (11)	Blair	Frankstown	WARM WATER FISHES	WWF	No
Oldtown Run	Blair	Frankstown	WARM WATER FISHES	WWF	No
UNT to Robinson Run (8)	Blair	Frankstown	WARM WATER FISHES	WWF	No
UNT to Juniata River (22)	Blair	Frankstown	WARM WATER FISHES	WWF	No
Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	No
Frankstown Branch Juniata River	Blair	Frankstown	WARM WATER FISHES	WWF	No
UNT to Piney Creek (5)	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No
Piney Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No
Clover Creek	Blair	Woodbury	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Raystown Branch Juniata River (37)	Huntingdon	Penn	WARM WATER FISHES	WWF	No
James Creek	Huntingdon	Penn	WARM WATER FISHES	WWF	No
UNT to James Creek (13)	Huntingdon	Penn	WARM WATER FISHES	WWF	No
UNT to Raystown Lake (9)	Huntingdon	Penn	WARM WATER FISHES	WWF	No
UNT to Little Trough Creek (7)	Huntingdon	Union	TROUT STOCKING	TSF	Yes
Little Trough Creek	Huntingdon	Union	TROUT STOCKING	TSF	Yes
UNT to Smith Run (11)	Huntingdon	Union	TROUT STOCKING	TSF	No
Smith Run	Huntingdon	Union	TROUT STOCKING	TSF	No
UNT to Hares Valley Creek (9)	Huntingdon	Union	TROUT STOCKING	TSF	No
Hares Valley Creek	Huntingdon	Union	TROUT STOCKING	TSF	No
Scrub Run	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Scrub Run (1)	Huntingdon	Union	HIGH QUALITY-COLD WATER FISHES	HQ	No
Singers Gap Run	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Singers Gap Run (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No

Receiving Waters Table

Pennsylvania Pipeline Project

South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Siltation Impaired
UNT to Hill Valley Creek (1)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No
Hill Valley Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Juniata River (3)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Aughwick Creek (8)	Huntingdon	Shirley	TROUT STOCKING	TSF	No
Aughwick Creek (2)	Huntingdon	Shirley	TROUT STOCKING	TSF	No
UNT to Fort Run (7)	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes
Fort Run	Huntingdon	Shirley	COLD WATER FISHES	CWF	Yes
UNT to Blacklog Creek (6)	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No
Blacklog Creek	Huntingdon	Shirley	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to George Creek (19)	Huntingdon	Tell	COLD WATER FISHES	CWF	No
George Creek	Huntingdon	Tell	COLD WATER FISHES	CWF	No
UNT to George Creek (7)	Juniata	Lack	COLD WATER FISHES	CWF	No
George Creek	Juniata	Lack	COLD WATER FISHES	CWF	No
UNT to Tuscarora Creek (20)	Juniata	Lack	COLD WATER FISHES	CWF	No
Tuscarora Creek	Juniata	Lack	COLD WATER FISHES	CWF	No
Horse Valley Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Horse Valley Run (5)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Shermans Creek (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
Shermans Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Shultz Creek (4)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
Shultz Creek	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Shaeffer Run (6)	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
Shaeffer Run	Perry	Toboyne	HIGH QUALITY-COLD WATER FISHES	HQ	No
Bull Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No
Laurel Run	Perry	Jackson	EXCEPTIONAL VALUE	EV	No
UNT to Laurel Run (7)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to South Branch Laurel Run (1)	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No
South Branch Laurel Run	Perry	Jackson	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Double Gap Creek (12)	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No
Doubling Gap Creek	Cumberland	Lower Mifflin	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Double Gap Creek (2)	Cumberland	Upper Frankford	HIGH QUALITY-COLD WATER FISHES	HQ	No
Rock Run	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No
UNT to Rock Run (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No
UNT to Conodoguinet Creek (8)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	Yes

Receiving Waters Table

Pennsylvania Pipeline Project

South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Siltation Impaired
UNT to Bloser Creek (5)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No
Bloser Creek	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No
UNT to Locust Creek (1)	Cumberland	Upper Frankford	WARM WATER FISHES	WWF	No
UNT to Locust Creek (8)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No
Locust Creek	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	No
UNT to Conodoguinet Creek (3)	Cumberland	Lower Frankford	WARM WATER FISHES	WWF	Yes
UNT to Opossum Creek (9)	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No
Opossum Creek	Cumberland	Lower Frankford	HIGH QUALITY-TROUT STOCKING	HQ	No
UNT to Conodoguinet Creek (30)	Cumberland	North Middleton	WARM WATER FISHES	WWF	Yes
UNT to Meetinghouse Run (5)	Cumberland	North Middleton	WARM WATER FISHES	WWF	No
Meetinghouse Run	Cumberland	North Middleton	WARM WATER FISHES	WWF	No
Conodoguinet Creek	Cumberland	North Middleton	WARM WATER FISHES	WWF	Yes
UNT to Conodoguinet Creek (13)	Cumberland	Middlesex	WARM WATER FISHES	WWF	Yes
UNT to Letort Spring Run (3)	Cumberland	Middlesex	COLD WATER FISHES	CWF	No
UNT to Letort Spring Run (3)	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No
Letort Spring Run	Cumberland	Middlesex	COLD WATER FISHES	CWF	No
Letort Spring Run	Cumberland	Middlesex	HIGH QUALITY-COLD WATER FISHES	HQ-CWF	No
UNT to Conodoguinet Creek (10)	Cumberland	Middlesex	WARM WATER FISHES	WWF	Yes
Hogestown Run	Cumberland	Silver Spring	COLD WATER FISHES	CWF	Yes
Trindle Spring Run	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	No
UNT to Trindle Spring Run (1)	Cumberland	Monroe	COLD WATER FISHES/HQ-CWF	CWF	No
UNT to Yellow Breeches Creek (13)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes
UNT to Cedar Run (5)	Cumberland	Upper Allen	COLD WATER FISHES	CWF	Yes
Yellow Breeches Creek	Cumberland	Lower Allen	COLD WATER FISHES	CWF	No
Yellow Breeches Creek	York	Fairview	COLD WATER FISHES	CWF	No
UNT to Yellow Breeches Creek (12)	York	Fairview	COLD WATER FISHES	CWF	No
UNT to Marsh Run (8)	York	Fairview	WARM WATER FISHES	WWF	No
UNT to Susquehanna River (9)	York	Fairview	WARM WATER FISHES	WWF	No
Susquehanna River	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No
UNT to Lisa Lake (9)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No
UNT to Susquehanna River (2)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	No
UNT to Swatara Creek (11)	Dauphin	Lower Swatara	WARM WATER FISHES	WWF	Yes
Swatara Creek	Dauphin	Londonderry	WARM WATER FISHES	WWF	No
UNT to Iron Run (3)	Dauphin	Londonderry	WARM WATER FISHES	WWF	Yes

Receiving Waters Table

Pennsylvania Pipeline Project

South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Siltation Impaired
UNT to Iron Run (13)	Dauphin	Derry	WARM WATER FISHES	WWF	Yes
Iron Run	Dauphin	Derry	WARM WATER FISHES	WWF	Yes
UNT to Spring Creek (10)	Dauphin	Derry	WARM WATER FISHES	WWF	Yes
UNT to Spring Creek (15)	Dauphin	Conewago	WARM WATER FISHES	WWF	Yes
UNT to Spring Creek (7)	Lebanon	South Londonderry	WARM WATER FISHES	WWF	Yes
UNT to Killinger Creek (8)	Lebanon	South Londonderry	TROUT STOCKING	TSF	Yes
UNT to Buckholder Run (5)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes
Buckholder Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes
UNT to Gingrich Run (4)	Lebanon	South Annville	TROUT STOCKING	TSF	Yes
Gingrich Run	Lebanon	South Annville	TROUT STOCKING	TSF	Yes
Bachman Run	Lebanon	South Annville	TROUT STOCKING	TSF	No
Beck Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	No
Snitz Creek	Lebanon	West Cornwall	TROUT STOCKING	TSF	No
UNT to Snitz Creek (1)	Lebanon	West Cornwall	TROUT STOCKING	TSF	Yes
UNT to Quittapahilla Creek (1)	Lebanon	South Lebanon	TROUT STOCKING	TSF	Yes
UNT to Hammer Creek (6)	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes
Hammer Creek	Lebanon	South Lebanon	COLD WATER FISHES	CWF	Yes
Middle Creek	Lebanon	Heidelberg	WARM WATER FISHES	WWF	No
UNT to Middle Creek (5)	Lebanon	Heidelberg	WARM WATER FISHES	WWF	No
UNT to Cocalico Creek (22)	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	No
Cocalico Creek	Lancaster	West Cocalico	HIGH QUALITY-WARM WATER FISHES	HQ	No
Harnish Run	Lancaster	West Cocalico	WARM WATER FISHES	WWF	No
UNT to Harnish Run (3)	Lancaster	West Cocalico	WARM WATER FISHES	WWF	No
UNT to Little Cocalico Creek (4)	Lancaster	West Cocalico	TROUT STOCKING	TSF	No
UNT to Cocalico Creek (9)	Lancaster	Clay	HIGH QUALITY-WARM WATER FISHES	HQ	No
UNT to Little Cocalico Creek (5)	Berks	South Heidelberg	TROUT STOCKING	TSF	No
UNT to Cacoosing Creek (8)	Berks	South Heidelberg	COLD WATER FISHES	CWF	No
Cacoosing Creek	Berks	South Heidelberg	COLD WATER FISHES	CWF	No
UNT to Cacoosing Creek (15)	Berks	Spring	COLD WATER FISHES	CWF	No
Little Muddy Creek	Berks	Spring	TROUT STOCKING	TSF	No
UNT to Wyomissing Creek (13)	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	No
Wyomissing Creek	Berks	Cumru	HIGH QUALITY-COLD WATER FISHES	HQ	No
UNT to Allegheny Creek (19)	Berks	Brecknock	COLD WATER FISHES	CWF	No
Allegheny Creek	Berks	Brecknock	COLD WATER FISHES	CWF	No

Receiving Waters Table

Pennsylvania Pipeline Project

South-Central Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use - if applicable)	Chapter 93 Code	Siltation Impaired
UNT to Muddy Creek (8)	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No
Muddy Creek	Berks	Brecknock	HIGH QUALITY-TROUT STOCKING	HQ	No
Hay Creek	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No
Hay Creek	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	CWF	No
UNT to Hay Creek (12)	Berks	New Morgan	HIGH QUALITY-COLD WATER FISHES	CWF	No
UNT to Hay Creek (12)	Berks	New Morgan	EXCEPTIONAL VALUE	EV	No
UNT to Hay Creek	Berks	New Morgan	COLD WATER FISHES	CWF	No
UNT to Conestoga River (1)	Berks	New Morgan	WARM WATER FISHES	WWF	No
UNT to East Branch Conestoga River (12)	Berks	New Morgan	WARM WATER FISHES	WWF	No
East Branch Conestoga River	Berks	Caernarvon	WARM WATER FISHES	WWF	No

Receiving 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)

Receiving 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

Receiving 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

Table 3
Rare, Threatened, Endangered Specifies Restrictions and Avoidance Measures
SCRO

The following is listing of the conditions that SPLP has agreed to implement during pre-construction, construction and restoration, and post-construction activities drawn from final determination letters received from the four PNDI agencies; the PAFBC, PGC, USFWS, and DCNR and the final conservations plans approved by those agencies. The final determination letters and conservation plans located in Attachment 6 of the Project's Chapter 105 Joint Application for Permit is to be referenced at all times for these conditions and specific locations to ensure implementation of all agreed to actions.

Species or Area	Agency	County/AOC/ Survey Area	Population	Pre-Construction, Construction and Restoration, Post-Construction Activity	Clearance Letter	Conservation Plan	Primary Condition
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Construction mitigation measures include timing restrictions, construction Bumps, and monitoring and relocation procedures [Timber Rattlesnake Conservation Plan § 3.2]; Note: No construction timing restrictions are necessary due to the avoidance of den habitats and commitment to providing timber rattlesnake monitors during construction activities [Timber Rattlesnake Conservation Plan § 3.2.1]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Construction in close proximity to the five confirmed den locations that were avoided will occur at any time, but these areas will be monitored closely during the emergence period (April 15 to May 15) and the return period (September 1 to October 15) [Timber Rattlesnake Conservation Plan §3.2.1]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Within 19 areas identified in Figures 2-30 (Timber Rattlesnake Conservation Plan), erosion control fabric made of materials known to reduce the risk of snake entrapment will be selected [Timber Rattlesnake Conservation Plan § 3.2.2]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	During restoration and seeding, monofilament/plastic netting will be avoided within 19 areas identified in Figures 2-30 (Timber Rattlesnake Conservation Plan) [Timber Rattlesnake Conservation Plan § 3.2.2]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	100% biodegradable materials will be used for erosion control/moisture containment blankets within 19 areas identified in Figures 2-30 (Timber Rattlesnake Conservation Plan) [Timber Rattlesnake Conservation Plan § 3.2.2]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Designated PFBC approved timber rattlesnake biologist will ensure the proper construction Bumps are used to reduce the risk of entrapment of reptiles and amphibians within 19 areas identified in Figures 2-30 (Timber Rattlesnake Conservation Plan) [Timber Rattlesnake Conservation Plan § 3.2.2]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	All monitoring and handling conducted by PFBC approved timber rattlesnake biologists possessing the proper Scientific Collector Permits and proper skills to handle this species [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	PFBC approved timber rattlesnake biologists will be the primary point of contact whenever construction crews encounter a rattlesnake [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	PFBC approved timber rattlesnake biologists will be responsible for pre-construction surveys, during construction monitoring, capture and handling, and all reporting of findings and activities [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Construction monitoring by PFBC approved timber rattlesnake biologist will only be required between April 15 and October 15 during the timber rattlesnake's active season. Figures 37 to 46 (Timber Rattlesnake Conservation Plan) provide areas proposed for construction monitoring and were derived in consultation with Stan Boder (PFBC approved timber rattlesnake biologist) and were determined based on habitat and results of the 2014 and 2015 surveys [Timber Rattlesnake Conservation Plan § 3.2.3]

Table 3
Rare, Threatened, Endangered Specifies Restrictions and Avoidance Measures
SCRO

The following is listing of the conditions that SPLP has agreed to implement during pre-construction, construction and restoration, and post-construction activities drawn from final determination letters received from the four PNDI agencies; the PAFBC, PGC, USFWS, and DCNR and the final conservations plans approved by those agencies. The final determination letters and conservation plans located in Attachment 6 of the Project's Chapter 105 Joint Application for Permit is to be referenced at all times for these conditions and specific locations to ensure implementation of all agreed to actions.

Species or Area	Agency	County/AOC/ Survey Area	Population	Pre-Construction, Construction and Restoration, Post-Construction Activity	Clearance Letter	Conservation Plan	Primary Condition
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Monitoring will be restricted to 11 monitoring areas depicted on Figures 37 to 46 (Timber Rattlesnake Conservation Plan) with concentrated efforts on potential and confirmed denning and gestation habitats. Monitoring includes all construction areas including access roads and staging areas within the 11 monitoring areas [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Pre-construction surveys will be conducted within 48 hours prior to the scheduled construction activity. Purpose is to find rattlesnakes within the construction corridor and ensure that they are safely removed [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	If construction activities in the timber rattlesnake monitoring areas temporarily cease/break in the construction sequencing, then re-inspection of the work areas will be warranted prior to next scheduled activity [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	If trench or bore pit is left open within the monitoring areas, daily inspection of trench/pit for trapped rattlesnakes and other wildlife will be required until these areas are backfilled [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Snakes observed in construction area will be captured and relocated to previously selected release site. Captured snakes will be moved to distance minimizing linear distance from point of capture while simultaneously reducing probability of immediate return. SPLP will install temporary silt fencing for approximately 200 feet along the edge of the workspace facing the release point to prevent relocated individuals from returning to construction area [Timber Rattlesnake Conservation Plan § 3.2.3]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Restoration	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Project LODs intersect six confirmed gestation habitats. Gestation habitats will be intensely monitored during construction and restoration. Gestation habitats have and will be again photographed prior to construction and restored to the existing condition to the maximum extent practicable. PFBC approved timber rattlesnake biologists will use the PFBC's Guidelines for *Timber Rattlesnake Habitat Creation (revised 3-5-2010) Food Plots - Gas Well Openings - Access Roads - Pipelines* to ensure gestation habitats are properly restored to pre-construction condition in terms of rock placement and aerial extent of the area [Timber Rattlesnake Conservation Plan § 3.3.1]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Restoration	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	All created and restored habitats will be thoroughly documented in the field and presented within the final report [Timber Rattlesnake Conservation Plan § 3.3.1]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Operations	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Routine operation and maintenance activities (e.g., mowing, erosion control, bank stabilization) will not require special mitigation efforts other than training of the maintenance crew. Any timber rattlesnake encountered during routine activities will be left undisturbed and area will be vacated. If areas are in need of excavation or repair, SPLP follows appropriate environmental protocols (e.g., PNDI searches to ensure activities will not impact sensitive species) [Timber Rattlesnake Conservation Plan § 3.3.2]
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Reporting	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)	Report summarizing implementation of Timber Rattlesnake Conservation Plan will be submitted to PFBC upon completion of pipeline construction and ROW restoration. Report includes: name(s) and qualifications of investigator(s); survey/monitoring date(s); areas surveyed/monitored; number of timber rattlesnakes observed; sex/length of timber rattlesnakes captured; location of observations/captures; mitigation measures implemented; details regarding restored and created habitats; and, observations of other herpetofauna [Timber Rattlesnake Conservation Plan § 3.2.3]

Table 3
Rare, Threatened, Endangered Specifies Restrictions and Avoidance Measures
SCRO

The following is listing of the conditions that SPLP has agreed to implement during pre-construction, construction and restoration, and post-construction activities drawn from final determination letters received from the four PNDI agencies; the PAFBC, PGC, USFWS, and DCNR and the final conservations plans approved by those agencies. The final determination letters and conservation plans located in Attachment 6 of the Project's Chapter 105 Joint Application for Permit is to be referenced at all times for these conditions and specific locations to ensure implementation of all agreed to actions.

Species or Area	Agency	County/AOC/ Survey Area	Population	Pre-Construction, Construction and Restoration, Post-Construction Activity	Clearance Letter	Conservation Plan	Primary Condition
Freshwater Mussels (Rainbow Mussel, Yellow Lampmussel, Elktoe, Triangle Floater)	PAFBC	Huntingdon/ Juniata/ Cumberland	NA	Construction	10/26/15	NA	Drill/bore Aughwick Creek, Tuscarora Creek, and Conodoguinet Creek and implement PAFBC contingency recommendations for drilling/boring operations. [PAFBC letter dated 10/26/2015]
Allegheny Woodrat	PGC	Bowers Mountain 2 (Perry)	NA	Pre-Construction	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	At request of DCNR, SPLP will hire qualified woodrat biologist to live trap for 4 nights with 40 traps (160 trap nights) on the southern side of the existing pipeline at the Bowers Mountain 2 habitat area located within Tuscarora State Forest. Traps placed up to 50 feet from existing pipeline within suitable habitat and conducted in accordance with PGC's Allegheny Woodrat Survey protocol. Up to 10 captured woodrats fitted with radio telemetry transmitters allowing tracking of movements and survival. Each woodrat tracked nightly using radio telemetry for minimum of 3 weeks to begin the night immediately following the attachment of the transmitter. Tracking period will be planned to include minimum 10 days prior and 11 days after initial land disturbance. A report summarizing nightly movements of each woodrat provided to PGC and DCNR upon completion of study [Allegheny Woodrat Conservation Plan § 4.1]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Construction	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Work areas will be cleared of vegetation and rocks within the four occupied habitats to the minimum extend practicable allowing safe installation of pipelines [Allegheny Woodrat Conservation Plan § 4.2].
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	After installation and during grading back, windrowed rocks restored to pre-existing conditions to the maximum extent within habitat areas while allowing for safe operation of pipeline. Clear travel lane for vehicle access will remain parallel and adjacent to installed pipelines to allow repair and inspection [Allegheny Woodrat Conservation Plan § 4.2]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	SPLP will create new potential woodrat habitat in form of rock structures following the criteria stated in PGC's Allegheny Woodrat The Environmental Review Process for Pennsylvania document. Six rock structures are proposed within the four areas [Allegheny Woodrat Conservation Plan § 4.3] SPLP will construct travel corridors in the form of rock structures to allow woodrats to safely cross the existing and proposed ROW in Jacks Mountain 3 [Letter to PGC dated 5/26/2016; [Allegheny Woodrat Conservation Plan § 5.0]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	1 rock structure built at Jacks Mountain 2, 2 at Jacks Mountain 3 on SGL-71, 1 at Blacklog Mountain, and 2 at Bowers Mountain 2 on the Tuscarora State Forest [Allegheny Woodrat Conservation Plan § 4.3]

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Rare, Threatened, Endangered Specifies Restrictions and Avoidance Measures
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Species or Area	Agency	County/AOC/ Survey Area	Population	Pre-Construction, Construction and Restoration, Post-Construction Activity	Clearance Letter	Conservation Plan	Primary Condition
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Rock structures will be at least 5 ft in height, contain boulders at least 3 ft in diameter arranged to maximize amount of openings present. Structures will be approximately 25 feet long and 10 feet wide for those proposed at Jacks Mountain 2, Blacklog Mountain, and Bowers Mountain 2. The two structures acting as travel corridors at Jacks Mountain 3 will be approximately 15 feet wide and have lengths of approximately 86 feet and 75 feet due to the angles of the existing ROW and new ROW [Allegheny Woodrat Conservation Plan § 4.3]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	If possible, underground openings will be used to create deepest caverns possible. Flat rocks with as many flat ledges as possible will be created for latrines and food caches, smaller boulders placed around the edges of core habitat [Allegheny Woodrat Conservation Plan § 4.3]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Rock excavated during construction should be saved and used for rock structure creation [SPLP - Pennsylvania Pipeline SGL 71 Woodrat Mitigation Plan found within the AWR Conservation Plan (May 2016)]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Large angular rocks (>3 feet in diameter) placed in core of structure to promote ledges, overhangs, caves, and interior passages [SPLP - Pennsylvania Pipeline SGL 71 Woodrat Mitigation Plan found within the AWR Conservation Plan (May 2016)]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Medium-small angular rocks (>1 foot in diameter) placed over the core rocks to depth of 2 feet [SPLP - Pennsylvania Pipeline SGL 71 Woodrat Mitigation Plan found within the AWR Conservation Plan (May 2016)]

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Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Avoid transferring soil from excavation site to rock structures- screen/wash smaller rocks to remove excess soil prior to final placement on structures [SPLP - Pennsylvania Pipeline SGL 71 Woodrat Mitigation Plan found within the AWR Conservation Plan (May 2016)]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Except at Bowers Mountain 2 habitat area, all structures will be constructed within temporary workspace adjacent to the permanent easement/license agreement. At Bowers Mountain 2, the structures will traverse the existing 8-inch pipeline ROW and this proposed easement, however gaps will need to be placed at the intersection of the structure with existing pipelines and along a travel lane [Allegheny Woodrat Conservation Plan § 4.3]
Allegheny Woodrat	PGC	Jacks Mountain 2 (HU), Jacks Mountain 3 (HU), Blacklog Mountain (HU), Bowers Mountain 2 (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Construction of rock structures will be overseen by trained biologist who has performed woodrat surveys and is familiar with habitat characteristics and needs [Allegheny Woodrat Conservation Plan § 4.3]
Allegheny Woodrat	PGC	Jacks Mountain 3/ SGL 71 (HU)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	In addition to the 2 rock structures at Jacks Mountain 3, PGC has requested additional measures at this location as outlined in the PGC authored mitigation plan (May 9, 2016) titled "Sunoco - Pennsylvania Pipeline SGL 71 Woodrat Mitigation Plan". SPLP will plant 300 Pennsylvania seedlings comprised of seven Species (American chestnut, common [black] elderberry, blackberry, smooth gooseberry, American black currant, devil's walking stick, and American hazelnut). 100 must be American chestnut and at least 100 must be common (black) elderberry. PGC identified 62.4 acre area where plantings should occur and smaller 16.4 acre subset of the area must have 50 percent of the 300 total plantings [Allegheny Woodrat Conservation Plan § 4.3] SPLP ensure 70% survival rate for 3 months after planting [Allegheny Woodrat Conservation Plan § 4.2] The details and special conditions for these plantings must reference the AWR Conservation Plan and specifically the Sunoco - Pennsylvania Pipeline SGL 71 Woodrat Mitigation Plan included as an Appendix D to that plan.
Allegheny Woodrat	PGC	Bowers Mountain 2/ Tuscarora SF (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	At Bowers Mountain 2 habitat area located on the Tuscarora SF, SPLP will enhance existing occupied habitat areas by cutting undesirable tree species (e.g., birch and maple) and planting mast producing species such as hawthorn, black oak, scrub oak, and American mountain ash. Cuttings and plantings will be limited to portions of the identified occupied habitat polygons that occur outside of the LOD and represents a total of 28.4 acres. [Allegheny Woodrat Conservation Plan § 4.3] The details and special conditions for these plantings must reference the AWR Conservation Plan and specifically the DCNR Bureau of Forestry - Wood Rat Habitat Plan Parameters included as an Appendix E to that plan.
Allegheny Woodrat	PGC	Bowers Mountain 2/ Tuscarora SF (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Approximately 139 seedlings will be planted in accordance with PGC protocols listed above for SGL 71. In temporary workspaces intersecting the occupied woodrat habitat, SPLP will include plantings of mast producing species such as sassafras, grape, black gum, sumac, and pitch pine during restoration, totaling approximately 1 acre and no more than 80 seedlings planted in these areas [Allegheny Woodrat Conservation Plan § 4.3]
Allegheny Woodrat	PGC	Bowers Mountain 2/ Tuscarora SF (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	SPLP will create 1/4 acre food plot on southern side of existing ROW adjacent to existing woodrat habitat by removing undesirable species and planting diverse community of mast producing species which will include grey dogwood, arrow-wood viburnum, nannyberry, maple-leaf viburnum, black-haw, hawthorn, beaked hazelnut, scrub oak, black oak, flowering dogwood, silky dogwood, chokeberry, American mountain ash, hybrid chestnuts. If plantings do not maintain 75% survival through second growing season following construction, additional planting will be performed. [Allegheny Woodrat Conservation Plan § 4.3]

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Allegheny Woodrat	PGC	Bowers Mountain 2/ Tuscarora SF (Perry)	NA	Restoration	06/08/16	Allegheny Woodrat Conservation Plan (May 2016)	Food plot will be gated (new steel gate) and fenced off to prevent deer grazing. Area to be fenced/number of gates determined by district forester. New steel gates will serve as access for the food plot and for future access of ROW [Allegheny Woodrat Conservation Plan § 4.3]
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Pre-Construction	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)	SPLP will prevent small-footed bats from accessing summer roosting habitat identified within the Project LOD to avoid any chance of incidental take during construction. Prior to emergence from hibernation (March 31), SPLP will seal off these areas with geotextile material such as silt fencing, mesh screening, or other appropriate materials (max size of 2 mesh/inch will be installed). Cover materials will completely seal off all entrances, cracks, and crevices to potential roosting sites thereby preventing entry of small-footed bats, ensuring no harm or incidental take of this species during construction activities in identified habitat areas [Eastern Small-footed Bat Conservation Plan § 4.1]
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)	Following completion of construction, SPLP will construct roosting structures as close to the areas of impacted habitat as possible. Using a mitigation rate of 3:1, which yields 5 acres, and a rate of four structures per acre, SPLP will construct twenty new roosting structures [Eastern Small-footed Bat Conservation Plan § 4.2]
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)	Goal for roosting structures is to be created in areas of temporary disturbance such as along the temporary ROW, temporary workspaces, or in areas adjacent to these spaces. Final location of the structures also dictated by land availability [Eastern Small-footed Bat Conservation Plan § 4.2]
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)	In accordance with Pennsylvania Game Commission Eastern Small Footed Bat Environmental Review Roost Structure Guidance Document (August 2014 Revision), newly created roosting structures will have inner core that is 10-ft wide and 5-ft tall. Core will be covered by multiple layers of large flat rocks of varying sizes, maximizing cracks and crevices that contain 1-2 inch openings with some openings as narrow as 1/4-inch to provide protection from predators (e.g. snakes). Outer rocks and caps will be shingled to ensure precipitation does not enter structure. Rocks used will be cleaned of dirt and organic materials, limestone won't be used unless working in karst areas [Eastern Small-footed Bat Conservation Plan § 4.2]
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)	Structures arranged so that they are oriented southeast to west to receive greatest amount of sunlight exposure during the day, placed in close proximity to forested or early successional habitat to provide bats with cover from predators and travel corridors. If possible, structures placed in close proximity to perennial sources of water (e.g., wetlands, streams, riparian areas). Multiple rock piles constructed in same area will be spaced and grouped appropriately following evaluation of the impacted landscape [Eastern Small-footed Bat Conservation Plan § 4.2]
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Monitoring	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)	After completion of structures, emergence surveys performed by an experienced bat biologist during summer months to monitor usage. Performed over three year period or until bats seen emerging from structures. Three surveys performed at each structure to obtain 3 separate nights of data from different parts of survey season. First survey during second or third week of June, second during second week of July, final during last week of July [Eastern Small-footed Bat Conservation Plan § 4.2]
Bog turtle	USFWS	NA	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Environmental training will be required for all personnel working in the ROW. Training will include a section on wildlife protection focusing on sensitive species such as the bog turtle [Bog Turtle Conservation Plan § 2.2.1]
Bog turtle	USFWS	Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	SPLP will dry-bore Wetland C6 [Letter to USFWS dated 10/31/2016]
Bog turtle	USFWS	Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	AM2 will be crossed with an open trench with special protection exclusion measures and monitoring by a Qualified Bog Turtle Surveyor [Letter to USFWS dated 10/31/2016]
Bog turtle	USFWS	Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Five adjacent wetlands (C44, AM1, AM2, C7, and C8) will be protected through implementation of BMPs outlined in Bog Turtle Conservation Plan [Letter to USFWS dated 10/31/2016]; Work areas found within 300 feet of C7, C8, AM1, AM2, and C44 will have bog turtle exclusion fencing placed between wetland and construction area and Qualified Bog Turtle Surveyor present for monitoring during construction when it occurs during the active bog turtle season [Bog Turtle Conservation Plan § 2.2.1]
Bog turtle	USFWS	Lancaster	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	SPLP will HDD Wetland A54 and A55 [Letter to USFWS dated 10/31/2016]
Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Workspace and access between A54 and A55 will be off-limits to construction activity/disturbance and would only be utilized in case of an emergency [Bog Turtle Conservation Plan § 2.2.1]

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Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Service requested series of piezometers installed within Wetlands A54 and A55 to monitor groundwater conditions before, during, and after HDD takes place. SPLP committed to placing piezometers within wetlands as requested. Detailed plan will be submitted to Service for review prior to installation including proposed well locations, installed methodology, frequency of water level readings, and reporting methodology. Number of wells and frequency of water level readings sufficient to characterize groundwater levels within wetlands. SPLP will work with Qualified Bog Turtle Surveyor to ensure installation and monitoring does not affect species or alter habitat within wetlands. Preconstruction groundwater monitoring will begin with installation of piezometers within 2 weeks of receipt of USFWS approval of the plan and continue through construction for 1 year following successful installation of pipelines under these wetlands [Bog Turtle Conservation Plan § 2.2.1]
Bog turtle	USFWS	Lancaster and Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	A Qualified Bog Turtle Surveyor will be on site during all construction activities occurring across or in vicinity of bog turtle wetlands listed in Table 2 of Bog Turtle Conservation Plan [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster and Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Bog turtle wetlands include A54 (HDD), A55 (HDD), C6 (dry-bore), C7 (adjacent wetland), C8 (adjacent wetland), AM2 (open cut), C44 (adjacent wetland), and C43 (HDD). Qualified Bog Turtle Surveyor's responsibility is to monitor pre-construction, construction, and restoration activities to ensure plan is implemented to its fullest extent and work areas are not being exceeded and Project plans are being carried out. Also will ensure construction personnel are trained and proper BMPs are implemented, maintained, and removed as necessary upon completion of work in those areas. Multiple Qualified Bog Turtle Surveyors may be utilized to ensure all activities can be completed efficiently [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster and Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Qualified Bog Turtle Surveyor inspect the surveyed (e.g., staked) LOD and marked access roadways prior to disturbance, ensuring these areas match Project plans. Qualified bog turtle surveyors may need to clear vegetation by hand to height of 4 inches in some areas prior to start of construction for effective monitoring [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster and Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Surveys for bog turtles will occur prior to commencing any work related activities including installation of silt fencing. Daily surveys will be conducted in each active work space prior to construction each day [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster and Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Boundaries of habitat in close proximity to work areas temporarily marked to ensure no activities unintentionally conducted within bog turtle wetlands. Vertical curbing made of silt fence (min 10 in height) will be installed along entire wetland/upland boundary in work areas adjacent to bog turtle wetlands to prevent stormwater flowing from areas into the main wetland and prevent bog turtles from accessing proposed work spaces. Interior and exterior of barriers will be kept free of vegetation and monitored daily. Fencing will also "wall-off" any upland areas in the vicinity of bog turtle wetlands to further prevent turtles from entering project work spaces. Fencing locations, installation, maintenance, and cleanup will be closely monitored by Qualified Bog Turtle Surveyor [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster and Berks	NA	Post-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Post-construction measures include restoring and stabilizing uplands in proximity to bog turtle wetlands. Disturbed soils in adjacent uplands will be stabilized and restored per Erosion and Sedimentation Control and Pollution and Prevention Plans. Post-construction monitoring of these areas will be conducted to ensure that proper revegetation of native plant species occurs [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster and Berks	NA	Post-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	After completion of construction, one post-construction survey will be conducted by Service-recognized bog turtle surveyor to monitor the identified populations [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster	NA	Post-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	"No mowing" signs will be placed along the boundary of the in-ROW bog turtle wetlands A54 and A55 and prevent mowing within the wetland during post-construction routine pipeline ROW operation and maintenance activities. Additional signs placed at the edge of Zone 2 (300 feet from the edge of the wetland) to demarcate the limit of herbicide application within the ROW. Hand clearing within the Zone 2 areas will only occur between October 1 and March 31 to avoid impacts to individual bog turtles [Bog Turtle Conservation Plan § 2.2.2]
Bog turtle	USFWS	Lancaster	NA	Pre-construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	All construction personnel, including professional survey personnel, will be trained on implementation of the HDD contingency plan, the identification of the species and its biology, and the location of areas of particular concern. All construction personnel, Environmental Inspectors, and on-site bog turtle specialists will be provided with the necessary Project plans, mapping permits, authorized impacts, clearance letters, conservation plans, and the HDD contingency plan prior to start of construction activities [Bog Turtle Conservation Plan Appendix F]
Bog turtle	USFWS	Lancaster	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	At the bog turtle HDD, inspection of work areas and compliance with project plans carried out daily by bog turtle specialists. In addition, when drilling commences the BT Specialist will inspect all disturbed upland areas and silt fencing multiple times for bog turtles and inadvertent returns, including surfacing of ground water by bog turtle specialist. Multiple daily inspections for inadvertent returns within wetland areas determined unnecessary and a one-time daily inspection would reduce direct disturbance of normal behaviors if turtles present. Inspections will continue until drill is completed and inadvertent return risk in wetlands removed. Only if drilling contractor suspects an inadvertent return as determined from drilling progress and monitoring of drilling fluids would more than one daily inspection of wetlands for returns be performed [Bog Turtle Conservation Plan Appendix F]

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Bog turtle	USFWS	All	NA	Construction, Restoration	10/31/16	Bog Turtle Conservation Plan (April 2016)	Construction personnel trained to report all turtle observations to EI immediately upon siting. All bog turtles not in harm's way will be documented within Project logs and reported to USFWS/USACE/PADEP within the final report. Documentation to include dates, times, photographs, and behavior [Bog Turtle Conservation Plan Appendix F]
Bog turtle	USFWS	All	NA	Construction, Restoration	10/31/16	Bog Turtle Conservation Plan (April 2016)	Bog turtles in harm's way shall be handled by bog turtle specialist assigned to area and only if handling determined necessary to remove risk of injury/death. Other project personnel allowed to move turtles small distances, but only in cases of immediate danger. Otherwise, use steps to passively remove threat and allow turtles to continue normal behavior. Turtles only moved to area within same wetland, only to distance necessary to remove threat. Additional silt fence installation may be required in area to prevent turtles from returning to areas presenting threat. Removal/relocation of construction activity in particular area will be considered if practicable to completing the drill. Bog turtles found within harm's way reported to USFWS immediately as an incident and how it was handled [Bog Turtle Conservation Plan Appendix F]
Bog turtle	USFWS	Lancaster and Berks	NA	Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	SPLP will implement the Project's inadvertent return plan, that contains special bog turtle area procedures for the drill at A55/ A54 [Bog Turtle Conservation Plan]
Bog turtle	USFWS	Berks	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	1. Prior to performing construction in wetlands, streams, or uplands within 300 feet of potential bog turtle habitat, all areas of expected disturbance must be surveyed by qualified surveyor for presence of bog turtles immediately prior to construction commencement 2. Prior to survey, herbaceous vegetation should be cut to height of 4-6 inches using hand-held trimmer/weed-cutter, then carefully raked away from area to be searched, with qualified bog turtle surveyor present for clearing 3. Immediately following survey, silt fencing should be place between wetland and proposed construction zone while surveyor present ot ensure fencing is properly installed in correct location (to be removed immediately following construction 3. If bog turtles located in searches, Service and PFBC should be contacted immediately, construction should not proceed until further consultation occurs, and survey results should be submitted to Service and PFBC [Letter from USFWS dated 10/31/2016]
Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Immediately following survey, silt-fencing should be placed between wetland and proposed construction zone while bog turtle surveyor is present to ensure fencing is properly installed in correct location. Silt-fencing should be removed immediately following construction [Letters from USFWS dated 10/31/2016; 9/15/2016]
Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Implement bog turtle radio-telemetry study protocol [Letter from USFWS dated 10/31/2016]
Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	Implement Service-approved vibration monitoring plan along the alignment and within wetlands if HDD activities extend into bog turtle dormant season [Letter from USFWS dated 10/31/2016]
Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	SPLP will conduct up to 8 days of bog turtle Phase 2 surveys (between September 18 and October 15, 2016) in order to capture approximately 10 appropriately sized bog turtles each in wetlands A54 and A55 to be fitted with transmitters. A total of 20 bog turtles fitted with transmitters is the goal of or this telemetry study [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	SPLP will deploy at least 20 bog turtle traps in A54 and A55. Traps will be used for at least 10 consecutive days, or at least until 10 bog turtles have been fitted with transmitters. Traps will be checked daily while deployed in A54 and A55 [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Pre-Construction	10/31/16	Bog Turtle Conservation Plan (April 2016)	All healthy adult bog turtles (target goal of 10 per wetland) of suitable size captured during surveys will be fitted with transmitters equipped with batteries having approximately 9 months of service life. Equal numbers of mailed and females will be fitted with transmitters to extent practical. Should Phase 2 and Phase 3 surveys during fall 2016 determine populations in A54 and A55 are lower than anticipated, number of bog turtles fitted with transmitters may be less than 10 in each wetland [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	Bog turtles fitted with transmitters will be tracked twice a week during pre-construction time period to monitor bog turtle activity, identify fall travel patterns, and determine locations of over-wintering sites. All bog turtle locations will be recorded via sub-meter accuracy GPS technology and mapped accordingly. Bog turtles may be periodically checked/handled during this time period if no movement observed since previous field tracking and to ensure proper attachment of transmitter. Pre-construction time period will be approximately 4 weeks [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]

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Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	During active construction (when HDD is ongoing), bog turtles fitted with transmitters will be tracked at least every other day while drilling is active to monitor bog turtle activity and determine/confirm usage of over-wintering sites. All locations recorded via GPS technology (sub-meter accuracy) and mapped accordingly. No bog turtles will be handled or disturbed by biologist tracking the turtles during this time period [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	During early post-construction, bog turtles fitted with transmitters will be tracked twice a week to monitor activity and determine/confirm usage of over-wintering sites. All locations recorded via GPS technology (sub-meter accuracy) and mapped accordingly. No bog turtles will be handled or disturbed by biologist tracking the turtles during this time period. Early post-construction time period will last 4 weeks [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	All bog turtles fitted with transmitters will continue to be tracked and mapped at least 1 time per month until April 2017, at which time they will be captured and have transmitters removed [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	Bog turtles fitted with transmitters will be minimally handled during the study, and in any event, will be returned to their location of capture as soon as possible [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	The USFWS/PFBC will be provided a map showing the location of the hibernating turtles, once all are hibernating [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	Any large movements of over 15 feet from original hibernation location after November 1 and before April 1 or any surface operations during this time period will be immediately reported to USFWS/PFBC if movement or surfacing cannot be dismissed due to unseasonably warm weather [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Construction, Restoration, Monitoring	10/31/16	Bog Turtle Conservation Plan (April 2016)	Any mortalities will result in drill stoppage and immediate reporting to USFWS [SPLP Pipeline, L.P. Pennsylvania Pipeline Project (PPP) Radio-Telemetry Study Protocol for Bog Turtle Monitoring Associated with Horizontal Directional Drill (HDD) at Wetlands A54 and A55 in Lancaster County, Pennsylvania]
Bog turtle	USFWS	Lancaster	NA	Operations	10/31/16	Bog Turtle Conservation Plan (April 2016)	SPLP will commit to protection of A54 and A55 through operation of the pipelines through the installation of no mowing signs, hand clearing, limited herbicide applications [Letter to USFWS dated 10/31/2016]
Indiana bat	USFWS	Allegheny, Westmoreland, Cambria, Huntingdon, and Blair	NA	Pre-Construction	10/31/16	Myotis Conservation Plan (April 2016)	Limited tee clearing proposed where the Project traverses a portion of the Layton Clay Fire Mine and Hartman Mine Indiana bat swarming habitats. SPLP has agreed to implement tree clearing in these swarming areas between November 15 and March 31 [Myotis Conservation Plan §§ 2.2.1; 2.2.2]
Indiana bat, Northern long-eared bat	USFWS	NA	NA	Pre-Construction	10/31/16	Myotis Conservation Plan (April 2016)	Environmental training is a requirement of all personnel working in the field on the ROW. Training will include section on wildlife protection in general, but also will focus on sensitive species, including discussion on Indiana bat and northern long-eared bat. Training will involve the identification of the LOD in general and any timing restrictions placed on various land disturbances, such as tree clearing [Myotis Conservation Plan § 2.2.1]
Migratory Birds	USFWS	NA	NA	Pre-Construction	10/31/16	Migratory Bird Conservation Plan (July 2016)	SPLP has reduced and minimizes impact project wide. See Migratory Bird Conservation Plan.
Antennaria virginica	PADCNR	Blair/AOC W14	Populations 3,8,16	Construction	11/15/15	Conservation Plan for Identified Species [Plants] of Special Concern (November 2015)	Unavoidable impacts anticipated- minimization through the use of soil segregation and replacement [Conservation Plan for Identified SOSC §3.2.4]
Antennaria virginica	PADCNR	Blair/AOC W14	Populations 7 and 9	Monitoring	11/15/15	Conservation Plan for Identified Species [Plants] of Special Concern (November 2015)	SPLP has agreed to conduct monitoring of these populations for three (3) years annually to document recolonization and success of the minimization and mitigation strategies [PADCNR Letter 1/15/2016]

Table 3
Rare, Threatened, Endangered Specifies Restrictions and Avoidance Measures
SCRO

The following is listing of the conditions that SPLP has agreed to implement during pre-construction, construction and restoration, and post-construction activities drawn from final determination letters received from the four PNDI agencies; the PAFBC, PGC, USFWS, and DCNR and the final conservations plans approved by those agencies. The final determination letters and conservation plans located in Attachment 6 of the Project's Chapter 105 Joint Application for Permit is to be referenced at all times for these conditions and specific locations to ensure implementation of all agreed to actions.

Species or Area	Agency	County/AOC/ Survey Area	Population	Pre-Construction, Construction and Restoration, Post-Construction Activity	Clearance Letter	Conservation Plan	Primary Condition
Carex shortiana	PADCNR	Juniata/ AOC E1	Populations 4,5	Construction	11/15/15	Conservation Plan for Identified Species [Plants] of Special Concern (November 2015)	No impacts- HDD bore will travel beneath this population [Conservation Plan for Identified SOSC §3.2.5]
Polygala polygama	PADCNR	Perry/ AOC E2	Populations 1,2,3,5	Pre-Construction	11/15/15	Conservation Plan for Identified Species [Plants] of Special Concern (November 2015)	Minimization through pipeline alignment and LOD shift. Routing through the State Forest has already been agreed upon by the PADCNR and Tuscarora State Forest District Forester and was routed to the south to avoid majority of impacts to these SOSC [Conservation Plan for Identified SOSC § 3.2.6

Table 4
Trout In-Stream Restrictions
SCRO

County	Stream ID	E&S Plan Sheet	In Stream Restriction Window
Blair	S-Q58	3.08	10/1-12/31
Blair	S-BB96	3.46	10/1-12/31
Blair	S-L69	3.46	10/1-12/31
Blair	S-L72	3.46	10/1-12/31
Blair	S-L96	3.03	10/1-12/31
Blair	S-M38	3.52	10/1-12/31
Blair	S-L76	3.46	10/1-12/31
Blair	S-L74	3.46	10/1-12/31
Blair	S-L68	3.48	10/1-12/31
Blair	S-L83	3.08	10/1-12/31
Blair	S-M73	3.16	10/1-12/31
Blair	S-L97	3.03	10/1-12/31
Blair	S-L98	3.05	10/1-12/31
Blair	S-BB44	3.38	10/1-12/31
Blair	S-BB47	3.36	10/1-12/31
Blair	S-BB49B	3.32	10/1-12/31
Blair	S-KP1	3.32	10/1-12/31
Huntingdon	S-L21	3.74	3/1-6/15
Huntingdon	S-K96	3.74	3/1-6/15
Huntingdon	S-K95	3.74	3/1-6/15
Huntingdon	S-M1	3.72	3/1-6/15
Huntingdon	S-M2	3.72	3/1-6/15
Huntingdon	S-K94	3.73	3/1-6/15
Juniata	S-K58	3.08	3/1-6/15
Juniata	S-K55	3.09	3/1-6/15
Juniata	S-K59	3.08	3/1-6/15
Juniata	S-K60	3.08	3/1-6/15
Juniata	S-K61	3.08	3/1-6/15
Juniata	S-K64	3.08	3/1-6/15
Juniata	S-K66	3.08	3/1-6/15
Juniata	S-K68	3.07	3/1-6/15
Juniata	S-K69	3.06	3/1-6/15
Juniata	S-K70	3.06	3/1-6/15
Juniata	S-K75	3.05	3/1-6/15
Juniata	S-K71	3.06	3/1-6/15
Juniata	S-K74	3.05	3/1-6/15
Juniata	S-K57	3.08	3/1-6/15
Juniata	S-K65	3.08	3/1-6/15
Juniata	S-K67	3.07	3/1-6/15
Perry	S-Q63	3.16	3/1-6/15 and 10/1-12/31
Perry	S-Q64	3.16	3/1-6/15 and 10/1-12/31
Perry	S-Q65	3.17	3/1-6/15 and 10/1-12/31
Perry	S-Q66	3.17	3/1-6/15 and 10/1-12/31
Perry	S-Q67	3.17	3/1-6/15 and 10/1-12/31
Perry	S-J61	3.31	10/1-12/31

Table 4
Trout In-Stream Restrictions
SCRO

County	Stream ID	E&S Plan Sheet	In Stream Restriction Window
Perry	S-J65	3.32	10/1-12/31
Perry	S-J64	3.32	10/1-12/31
Perry	S-J68	3.33	10/1-12/31
Perry	S-J69	3.33	10/1-12/31
Perry	S-J74	3.22	10/1-12/31
Perry	S-J76	3.22	10/1-12/31
Perry	S-J75	3.22	10/1-12/31
Perry	S-J72	3.23	10/1-12/31
Perry	S-L4	3.04	10/1-12/31
Perry	S-J60	3.31	10/1-12/31
Perry	S-J63	3.31	10/1-12/31
Perry	S-J62	3.31	10/1-12/31
Cumberland	S-I69	4.33	3/1-6/15
Cumberland	S-I67	4.33	3/1-6/15
Cumberland	S-H71	4.97	3/1-6/15
Cumberland	S-H69	4.97	3/1-6/15
Cumberland	S-H70	4.97	3/1-6/15
Lebanon	S-A17	5.32	3/1-6/15 and 10/1-12/31
Lebanon	S-A23	5.45	10/1-12/31
Lebanon	S-A24	5.47	10/1-12/31
Lebanon	S-A25	5.50	10/1-12/31
Lebanon	S-A27	5.53	10/1-12/31
Lebanon	S-A28	5.54	10/1-12/31
Lebanon	S-H7	5.57	10/1-12/31
Berks	S-C7	5.41	10/1-12/31
Berks	S-B30	5.42	10/1-12/31
Berks	S-C101	5.48	10/1-12/31
Berks	S-C102	5.48	10/1-12/31
Berks	S-C107	5.51	10/1-12/31
Berks	S-H21	5.54	10/1-12/31
Berks	S-AM1	N/A	10/1-12/31
Berks	S-H23	5.52	10/1-12/31
Berks	S-H22	5.52	10/1-12/31
Berks	S-C108	5.51	10/1-12/31
Berks	S-C104	5.49	10/1-12/31
Berks	S-C103	5.49	10/1-12/31
Berks	S-B27	5.45	10/1-12/31
Berks	S-B28	5.45	10/1-12/31
Berks	S-B29	5.45	10/1-12/31
Berks	S-C2	5.38	10/1-12/31
Berks	S-C1	5.38	10/1-12/31