

*Atlantic Sunrise Project – PA DEP Chapter 105 Joint Permit Application
Transcontinental Gas Pipe Line Company, LLC
Luzerne County*

**ATTACHMENT L -5
ENVIRONMENTAL ASSESSMENT ENCLOSURE D**

Revised July 2017

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ENCLOSURE D PROJECT IMPACTS

A. Impacts on Designated Resources

Construction and operation of linear infrastructure Projects, including the proposed Atlantic Sunrise Project (Project) inevitably impact designated resources, including wetlands and watercourses. The Project has been designed to avoid and minimize impacts to environmental as well as recreational resources. The following discussion, as well as the Alternatives Analysis provided in **Attachment P-1**, details the Project's potential impacts and the avoidance and minimization measures that Transco has taken thus far and will take in during construction and operation of the Project to protect designated resources. Additionally, the Comprehensive Environmental Evaluation for the Central Penn Line provided in **Appendix L-1** presents a summary of the alternatives analysis for the Project as whole.

Transco has sited the proposed compressor, meter and regulating stations, and other minor aboveground appurtenances, such as main line valves (MLVs) and pig launcher and receiver facilities and communications towers, outside of wetlands and watercourses. Therefore, no direct impacts or losses to wetlands or watercourses are expected to result from construction and operation of the aboveground facilities.

Potential impacts associated with the Project on national and/or state forests, park lands, wildlife refuges, game lands, and/or wildlife sanctuaries were identified for the construction and operation of the Project within **Luzerne County**. Information regarding potential impacts to national, state, or local historic sites and cultural or archaeological landmarks within the Project area was coordinated through the Pennsylvania Historical Museum Commission (PHMC). Threatened and endangered species coordination effort was conducted through the applicable federal and state agencies. **Field studies were conducted within 100 percent of the Project area in Luzerne County.**

A1. National, State or Local Park, Forest or Recreation Area

Ricketts Glen State Park

Construction and operation of the Project will require the acquisition of temporary workspace and new permanent easement within the boundaries of Ricketts Glen State

Park which is managed by the Pennsylvania Department of Conservation and Natural Resources (PA DCNR) Bureau of Forestry (BOF).

The entire portion of the Project that crosses Ricketts Glen State Park is co-located with Transco's existing Leidy Line pipeline system. A total of 5.9 acres of Ricketts Glen State Park will be affected during construction, including 2.9 acres of open land on Transco's existing right-of-way (ROW), and 2.9 acres of upland forest and 0.1 acres of wetlands outside of the existing maintained ROW. Transco is requesting an additional 25-foot-wide permanent ROW adjacent to the existing permanent ROW for this Project. Following construction, Transco will maintain an additional 2.5 acres of permanent ROW adjacent to the existing ROW through Ricketts Glen State Park. A total of approximately 0.9 acres of upland forest will be permanently converted to open land for operation of the Project.

Transco minimized impacts on the Park and its visitors by co-locating the Project with the existing Leidy Line, and siting the Project at the southernmost tip of the park. Transco has coordinated with PA DCNR and is completing a ROW application which includes a State Forest Environmental Review (SFER). The following table is an excerpt from the SFER which details the goals of the property and anticipated impacts during construction and operation.

**Table L(d)-1
 Impacts on the Mission of the State Park System
 Ricketts Glen State Park – Atlantic Sunrise Project**

Mission	Project Impact
Outdoor recreation	The proposed Project is not expected to impact recreation within Ricketts Glen State Park (SP). None of the facilities supporting recreational activities within Ricketts Glen SP are located within 0.25 mile of CPL North. Additionally, existing forested vegetation is present between the proposed Project and existing recreational trails, which will buffer recreational users from temporary construction noise and from view of the construction site.
Environmental education	The proposed Project is not expected to impact any environmental education initiatives or programs within Ricketts Glen SP. Transco will work with State Parks to provide information and data gained through the Project within Ricketts Glen SP to PA DCNR to the extent practicable and appropriate, for educational purposes.
Natural, scenic, and aesthetic value	To minimize impacts on the natural, scenic, and aesthetic value of Ricketts Glen SP, the entire portion of CPL North that crosses Ricketts Glen SP is collocated with Transco's existing, maintained Leidy Line system. Collocating CPL North with the existing Leidy Line ROW minimizes the amount of tree clearing and new permanent, maintained easement. New easement for CPL North will be limited to 25 feet and is not anticipated to significantly alter the existing scenic quality due to the presence of the existing maintained Leidy Line ROW.

**Table L(d)-1
 Impacts on the Mission of the State Park System
 Ricketts Glen State Park – Atlantic Sunrise Project**

Mission	Project Impact
Historical value	As part of the Project, Transco has conducted a Phase I cultural resource survey investigation through the area of potential effect in Ricketts Glen SP. Consultation with the Pennsylvania State Historic Preservation Office (SHPO) is ongoing, however, no impact on historic resources is anticipated in Ricketts Glen SP from construction or operation of the Project. Transco will continue to consult with SHPO and State Parks to identify any areas of historic value and to avoid or mitigate for any potential impact.

A2. Natural, Wild, or Wilderness Area

No impacts to Natural, Wild or Wilderness Areas are expected to occur within Luzerne County.

A3. National, State, or Local Historic Site

Section A6 provides a summary of potential impacts to historic, cultural and archaeological resources.

A4. National Natural Landmark

There will be no impacts to national natural landmarks as a result of the portion of the Project within Luzerne County.

A5. National Wildlife Refuge

There will be no impacts to national wildlife refuges as a result of the portion of the Project within Luzerne County.

A6. Cultural or Archeological Landmarks

On May 1, 2014, Transco met with staff of the PHMC to discuss the Project, cultural resource impacts, and proposed cultural resources investigations. Transco also requested that, for the purpose of facilitating review of archaeological resources that a process developed for other natural gas Projects in Pennsylvania aimed at providing regular Determinations of Eligibility for archaeological resources be implemented. This process involves routine updates on the eligibility status of archaeological resources identified during Phase I surveys. Since this initial meeting, Transco’s coordination and consultation with the PHMC has been on-going.

A Transco-sponsored open house was held for the Project facilities in Luzerne County was held at Lake Lehman High School on May 20, 2014. Public comment from several landowners was received on potential cultural issues, all of which were examined and addressed during the cultural resources field reconnaissance for the Project. In addition to the open house, consultation was initiated with the Luzerne County Historical Society and Harvey's Lake Beach Association concerning cultural resources in Luzerne County. The Luzerne County Historical Society had no comment on the Project, and the Harvey's Lake Beach Association did not respond to consultation requests.

The Phase I archaeological field reconnaissance of the CPL-North study corridor in Luzerne County resulted in the identification of eight archaeological resources. All eight of these resources were recommended Not Eligible for the National Register of Historic Places (NRHP), and have been confirmed by the PHMC during eligibility review meetings as not requiring any further investigations prior to construction.

A total of 51 aboveground resources were identified during the Architectural History survey conducted for Project land requirements in Luzerne County; 40 of these resources are currently located within the Project, while an additional 11 resources were identified on parcels subsequently removed from the Project Area of Potential Effects (due primarily to changes in the Project alignment). One resource was determined to be a rural historic district identified by Transco and confirmed by PHMC. This rural historic district, called the Nesbitt Estate Rural Historic District, was determined to be Eligible by the PHMC with the Project representing an Adverse Effect to rock walls and other stone features, as well as the forest setting. The rural historic district crosses into Wyoming County as well, and so is counted as a resource for both Luzerne and Wyoming counties (see discussion of Wyoming County). Transco recommended two additional resources as Eligible for the NRHP, and PHMC review concluded that while one of the resources was Eligible, the other resource was determined to be Not Eligible. No anticipated effects were determined for the remaining 37 resources as a result of the Project. The geomorphological survey did not identify any potential for deeply buried cultural deposits on the Project land requirements in Luzerne County. **Attachments D-1 and D-2** provide a summary of consultation with PHMC and copies of correspondence, respectively.

A7. State Game Lands

State Game Lands (SGL) 206

The proposed route for the Project crosses the northern edge of Pennsylvania State Game Land (SGL) 206 between MP 11.0 and MP 11.3, and between MP 11.7 and 12.4. The portion of the Project that crosses SGL 206 is co-located with Transco's existing Leidy Line pipeline system. A total of 12.4 acres of the SGL will be affected during construction, including 3.1 acres of open land on Transco's existing ROW, and 8.8 acres of upland forest, and 0.5 acre of wetland outside of the maintained ROW. Transco is requesting an additional 25-foot-wide maintained ROW adjacent to the existing ROW. Following construction, Transco will maintain an additional 3.2 acres of permanent ROW adjacent to the existing ROW through SGL 206. A total of approximately 3.0 acres of upland forest will be permanently converted to open land for operation of the Project. In accordance with Transco's license agreement with the Pennsylvania Game Commission (PGC) and to minimize recreational use of SGL 206, Transco will not conduct construction activities on the opening day of any small game season, the opening day of spring or fall turkey season, the entire rifle bear season, the entire rifle deer season, or any of the Saturdays associated with any of these seasons unless approved in writing by the Land Management Group Supervisor.

A8. Federal, State, Local or Private Plant or Wildlife Sanctuaries

There will be no anticipated impacts to federal, state, local or private plant or wildlife sanctuaries as a result of the portion of the Project within Luzerne County.

A9. Areas Identified as Prime Farmland

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service (NRCS), in cooperation with other interested federal, state, and local government organizations, has inventoried land that can be used for production of the nation's food supply. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. It should be noted that not all important farmland soils are used for farming. NRCS makes important farmland designations based on soil properties, not on current or past use.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, (e.g., tree nuts, cranberries, and other fruits and

vegetables). It has the unique combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed.

Farmlands of statewide importance generally include those areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Farmland locations that are not identified as having national or statewide importance can be designated by local agricultural agencies as farmland of local importance for the production of food, feed, fiber, forage, and oilseed crops.

Approximately 7.5 miles of the Project will cross Prime Farmlands or Farmlands of Statewide Importance in Luzerne County. Pipeline construction may result in temporarily removing farmland soils from agricultural production if construction occurs during the growing season. Pipeline construction and operation will not result in any long-term loss of prime and important farmland. Soils that are currently designated as prime farmland and farmland of statewide importance will retain their designation both during and after construction. Effects on agricultural soils, including prime and important farmland soils, will be mitigated according to the Agricultural Plan and the Transco Plan, provided respectively as Attachments 6 and 17 of the Transco Environmental Construction Plan (ECP) (**Attachment M**). While some short-term decreases in agricultural productivity may result because of the disturbance of soil during construction, those effects can be mitigated over time by the restoration measures previously discussed and by resumption of proper soil management by landowners.

Construction of the contractor/pipe yards and contractor staging areas will temporarily effect prime and important farmland soils. Pipeline operation will not adversely affect agricultural soils, including prime farmland and farmland of statewide importance. Construction of the North Diamond Regulator Station will permanently affect approximately 1.8 acres of prime farmland and soils of statewide importance by converting them to nonagricultural land uses. The permanent loss of designated prime farmlands and farmlands of statewide importance at aboveground facilities will not be mitigated.

The Project crosses conservation easements Luzerne County including a Conservation Reserve Program (CRP) easement and a PA DCNR conservation easement. Transco conducted title searches to identify all easements crossed by the Project facilities and these easements are identified in Table L(d)-2 and L(d)-3.

TABLE L(d)-2					
Pennsylvania Conservation Easements Crossed by the Atlantic Sunrise Project in Luzerne County					
Facility	Easement Type	Begin Milepost	End Milepost	Land Affected During Construction (acres)	Land Affected During Operation (acres)
CPL North					
Luzerne County					
PA-LU- 188.000	PADCNR	20.7	20.7	1.0	0.3

TABLE L(d)-3			
Conservation Reserve Program/Conservation Reserve Enhancement Program Properties Crossed by the Atlantic Sunrise Project^a			
Facility/County/Tract	CRP/CREP	Begin Milepost	End Milepost
CPL North			
Luzerne County			
PA-LU-187.000	CRP	20.2	20.7

Conservation Reserve Program

The CRP is a land conservation program administered by the FSA. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10 to 15 years in length. The long term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat (USDA 2014).

The property enrolled in the CRP Program crossed by the Project in Luzerne County is identified in Table L(d)-3. Transco is working with the NRCS, local FSA agents, and landowners to obtain information on CREP/CRP properties in the Project area. Where the ROW crosses CREP/CRP acreage, Transco will reseed based on each landowner’s conservation plan filed at the local NRCS office. Seeding rates and species selection for CRP acreage will be determined based on the each conservation plan. Transco will work with the NRCS and landowners to make sure that all CRP acreage is identified and that

the appropriate seed mix is planted on individual acreage.

Transco will restore agricultural properties with conservation easements in accordance with the methods described the Transco Agricultural Plan provided as Attachment 6 of the Transco ECP (**Attachment M**).

B. Impacts on the Aquatic Environment

B1. Aquatic Habitats

All temporary impacts to aquatic resources are related to the construction of the pipeline. All permanent impacts to aquatic resources are related to the removal of vegetative cover for operation. No fill or impervious cover will be added to aquatic resources as part of this Project. Operational ROW will be maintained for a width of 10-feet at watercourse approaches and through palustrine emergent (PEM) and palustrine scrub-shrub (PSS) wetlands, and for a width of 30-feet through palustrine forested (PFO) wetlands. Transco is proposing the construction ROW widths to provide for safe and efficient construction of large-diameter pipeline facilities in accordance with Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1926.650-1926.652, Subpart P) and Interstate Natural Gas Association of America's (INGAA) workspace guidelines (INGAA 1999). Reductions of the construction ROWs will be made, where practicable, at various locations to address specific environmental or residential issues along the proposed pipelines. The impact analysis included in this section is related to resources associated with Pennsylvania Department of Environmental Protection (PA DEP) Chapter 105 jurisdictional areas.

The proposed Project extends through 46 special protection watersheds (e.g., High Quality or Exceptional Value) and watersheds that are considered siltation impaired. As a result, an anti-degradation analysis was prepared for the Project and a detailed listing of each watershed, cause of siltation, and location it will be crossed is provided for Luzerne County within **Attachment M**. Additionally, the Comprehensive Environmental Evaluation for the Central Penn Line provided in **Appendix L-1** presents a summary of the anti-degradation consistency analysis for the Project as whole.

The Project will affect 54 streams, 53 floodways, and 55 wetlands within Luzerne County. Per PA DEP guidance, the installation of a pipe under streams via trenchless construction techniques is considered a permanent impact. Please note that the total count of wetlands affected is based on cover types, such that a single wetland complex could have multiple wetland counts. For example, a single wetland complex comprised of PEM, PSS, and PFO cover types was counted as three wetland crossings for the purpose of impact presentation in this Application. Tables summarizing the overall impacts on waterbodies and wetlands for the Project as a whole are included in the Comprehensive Environmental Evaluation for the Central Penn Line in **Appendix L-1**.

Through the implementation of the (ECP), including the Best Management Practices (BMPs), water quality impacts are expected to be minimized to the extent practicable during construction, and no long term water quality impacts are expected to occur. Prior to conducting any in-stream work, all associated BMPs shall be installed and functional. BMPs will be installed at the edge of work areas, as necessary, to prevent siltation into wetlands in the vicinity of construction activities and will be maintained throughout the period of the construction activities. Wetland and watercourse boundaries will be clearly marked prior to construction activities.

Restoration of streams will involve, at a minimum, restoring each stream to pre-construction contours and revegetating surface water banks and riparian areas in accordance with the **Riparian Area Impact Assessment and Restoration Plan for the Project area in Luzerne County provided in Appendix L-2**.

In wetland areas, restoration activities will involve returning wetlands to pre-construction contours and seeding in non-inundated areas with an approved wetland seed mix. In general, hydrologic conditions are not anticipated to be impacted as a result of Project construction.

Transco has incorporated the following avoidance and minimization measures to reduce impacts to aquatic resources.

Erosion and Sediment Controls

Construction activities can disturb surface soils and cause subsequent sediment transport into adjacent wetlands. Sedimentation will be minimized by the installation of temporary sediment control measures between the upland construction areas and the wetlands. Permanent erosion controls, including slope breakers, trench breakers, and vegetative cover, will be used in adjacent upland areas to minimize long-term sedimentation into the wetlands. Energy dissipation devices may be installed at the down-slope end of slope breakers to minimize erosion of soil off the ROW into wetlands. Trench plugs will be installed in upland slopes adjacent to wetlands to prevent trench erosion. Trench plugs also will be spaced in accordance with the applicable state and federal regulations and installed at the edges of the wetland and on either side of watercourse crossings to prevent subsurface drainage along the pipeline.

To minimize erosion and promote revegetation within the wetland, removal of the root mats for woody vegetation will be allowed only directly over the trench area or where required to ensure safe working conditions. This serves to enhance regeneration of vegetation on the construction and permanent ROW. Permanent erosion control structures that could alter hydrology (e.g., slope breakers) will not be installed within wetlands, but these structures will be used in the adjacent upland areas to control erosion and sedimentation. Transco will employ BMPs as specified in erosion and sediment control permits and approved by PA DEP to further minimize the potential for soil compaction.

Turbidity and sedimentation could result from in-stream construction activities, trench dewatering, and/or construction-related stormwater runoff. In slow-moving waters, increases in suspended sediments could increase the biological oxygen demand and reduce levels of dissolved oxygen in localized areas during construction. Suspended sediments also could alter the chemical and physical characteristics of the water column on a temporary basis.

Transco will cross surface waters with flowing water present at the time of construction using dry-ditch construction methods to the greatest extent practicable. Dry-ditch crossing and trenchless watercourse crossing methods can dramatically reduce downstream sediment transport effects compared to wet open-cut crossings (Reid and Anderson 1999). Transco will employ BMPs as specified in its Erosion and Sediment Control General Permit

2 (ESCGP-2) application, which contains a site-specific erosion and sediment control plan to further minimize the potential for soil compaction (see **Attachment M** - provided under separate cover).

Transco will also install temporary equipment bridges across surface waters to reduce the potential for turbidity caused by movement of construction equipment and vehicular traffic. Equipment bridges will be constructed of timber mats or portable prefabricated bridges, depending on surface water conditions (e.g., if excessively soft soils are encountered in the surface water bed, or if high water flows occur, portable bridges will be used at minor surface water crossings). Typical drawings for equipment bridges are provided in Attachment 2 of the Transco ECP (**Attachment M**). Equipment bridges will be maintained until the pipe is installed and they are no longer needed. The bridges will then be removed. Equipment bridges will be designed to accommodate normal to high surface water flow and will be maintained to prevent flow restriction during the period of time the bridge is in use during construction.

To minimize sedimentation during pipeline construction across watercourses, trench spoil will be placed at least 10 feet away from water's edge, unless impractical due to topography, as specified in the Transco Project-specific Wetland and Waterbody Construction and Mitigation Procedures (Transco Procedures) (Attachment 18 of the Transco ECP [**Attachment M**]). Erosion controls will be placed around spoil piles to prevent sediment from flowing into surface waters. Additional Temporary Workspace (ATWS) will typically be set back 50 feet from the water's edge unless otherwise approved by the Federal Energy Regulatory Commission (FERC) and the United States Army Corps of Engineers (USACE). **Appendix P-1, Attachment P includes a description of the LOD for each wetland and watercourse impact proposed for the Project within Luzerne County, including site-specific justification for the required LOD and pipeline siting considerations.**

Once the pipe is placed in the trench, the excavated material will be replaced immediately, and the surface water banks and bed will be restored to preconstruction contours. To stabilize the banks, the surface water banks and riparian areas will be revegetated using approved seed mixes and/or erosion control blankets or matting in accordance with the **Riparian Area Impact Assessment and Restoration Plan for Luzerne County within Appendix L-2.**

Compaction

Compaction of wetland soils and rutting within wetlands will be minimized by using low-ground-pressure equipment and temporary equipment mats. In general, rutting of soils, which is a sign of compaction, in wetlands or in other areas during wet conditions will be avoided or minimized through the use of timber mats as deemed necessary during construction or by postponing work until soils have dried. In addition, Transco will minimize compaction of soils within agricultural lands, residential areas, and not saturated or inundated wetlands by stripping, segregating, and stockpiling topsoil separately from subsoil during construction. The Transco Procedures (ECP Attachment 18, provided within **Attachment M** of this Application) (Transco Procedures) and Agricultural and Construction Monitoring Plan (ECP Attachment 6, provided within **Attachment M** of this Application) indicate that the top 12 inches of topsoil from wetland and agricultural areas disturbed by trenching will be segregated from subsoil, except in areas where standing water is present, soils are saturated, or where shallow depth to bedrock conditions exist. These exceptions will be identified via visual assessment during grading and documented in the field with the Environmental and/or Agricultural Inspector. Immediately after backfilling is complete, the segregated topsoil will be restored to its original horizon location. Restoration of the soil surface elevations and contours and revegetation will be performed in accordance with Transco's ECP (**Attachment M**). Backfilling will occur to approximate grade; however, a soil crown may be placed above the trench to accommodate future soil settling.

If compaction occurs during construction, Transco will also use subsurface decompaction techniques, as described in the Transco Agricultural Construction and Monitoring Plan within Attachment 6 of Transco's ECP (**Attachment M**). Transco will employ BMPs as specified in erosion and sediment control permits and approved by the PA DEP to further minimize the potential for soil compaction.

Hydrology

Stream crossings are to be performed during low flow conditions with oversight from an environmental inspector. Storm event weather forecasts will be monitored prior to and during the stream crossing. The contractor will be required to maintain an adequate number of pumps on-site to facilitate an unanticipated increase in stream flow.

Per the Transco Procedures, provided as Attachment 18 of the ECP (**Attachment M**), the following additional measures for dam-and-pump watercourse crossings will be implemented:

- Use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
- Pumps will be properly aligned to prevent surface water bed scour at the pump discharge;
- Dams will be constructed with materials that prevent sediment and other pollutants from entering the watercourse;
- Pump intakes will be screened to minimize entrainment of fish; and,
- Dams and pumps will be continuously monitored to ensure proper operation throughout the watercourse crossing.

Per the Transco Procedures, provided as Attachment 18 of the ECP (**Attachment M**), the following additional measures for flume crossings of watercourses will be conducted:

- Sand bags, sand bag and plastic sheeting diversion structures, or the equivalent will be used to develop an effective seal and to divert stream flow through the flume pipe;
- Flume pipes will remain in place until trenching, pipe laying, backfilling, and initial streambed restoration efforts are complete;
- Flume pipes will be properly aligned to prevent bank erosion and streambed scour; and
- All flume pipes and dams that are not part of the equipment bridge will be removed as soon as final cleanup of the streambed and bank is complete.

Permanent changes in surface and subsurface hydrology along the pipeline alignment through a wetland can have a long-term effect on hydrology and associated function and value. Trench plugs will be installed at the entrance and exit of the pipeline through each wetland to ensure that the subsurface hydrology remains intact. Restoration of each wetland will include returning contours to preconstruction levels (within 6 inches) and removing temporary erosion control measures.

Trench Dewatering

During construction, the open trench could accumulate water, either from the seepage of groundwater or from precipitation. This water must be removed from the trench to allow construction to proceed. During trench dewatering, water will be pumped from the trench and discharged into vegetated upland areas after first being filtered through a straw bale structure and/or filter bag. The rate of flow from the pump will be regulated to prevent scouring from runoff. Dewatering will be conducted in a manner designed to prevent the flow of heavily silt-laden water directly into adjacent surface waters or wetlands and will be performed in accordance with the PA DEP and USACE permit requirements and the FERC Order.

Blasting

Transco anticipates the use of blasting in bodies of water or watercourses; however, Transco will not know for certain until construction activities commence. Watercourses with a higher potential for blasting are those with shallow depth to bedrock, as presented within Table L(d)-4. Transco's construction contractor will be required to demonstrate that blasting is necessary by first attempting to remove bedrock material using mechanical means, such as a hydraulic ram or splitter, rock trenching machine, or rock saw. Transco has submitted an Application for use of Explosives in Commonwealth Waters to the Pennsylvania Fish and Boat Commission (PFBC) for each proposed stream crossing in the event that blasting of bedrock is required to properly install the pipe.

**Table L(d)-4
 Watercourses with Shallow Depth to Bedrock Crossed by the Atlantic Sunrise Project in Luzerne County**

Waterbody ID	Waterbody Name ^a	Approximate Milepost ^b	Latitude	Longitude	Municipality	Stream Type	Crossing Lenth (feet)	Water Quality Classification ^c	Fishery Classification ^d	Crossing Method ^e
WW-T03-16003	UNT to Huntington Creek	14.48	41.31281	-76.13759	Ross	Ephemeral	5.27	HQ-CWF, MF	Class A Wild Trout Waters	II
WW-T02-16001	UNT to Phillips Creek	9.14	41.29778	-76.23757	Fairmount	Intermittent	5.44	HQ-CWF, MF	Class A Wild Trout Waters	II
WW-T03-16002A	UNT to Huntington Creek	14.95	41.31433	-76.12881	Ross	Intermittent	5.83	HQ-CWF, MF	Wild Trout Waters	II
WW-T53-17002	UNT to Huntsville Creek	M-0060 0.87	41.35134	-76.01101	Harvey's Lake	Intermittent	10.40	CWF, MF	Wild Trout Waters	II
WW-T53-17003B	UNT to Huntsville Creek	M-0060 0.90	41.35179	-76.01109	Harvey's Lake	Intermittent	10.22	CWF, MF	Wild Trout Waters	II
WW-T53-17004	UNT to Huntsville Creek	M-0060 0.94	41.35217	-76.01072	Harvey's Lake	Intermittent	10.76	CWF, MF	Wild Trout Waters	II
WW-T02-16002	Phillips Creek	9.28	41.29814	-76.23494	Fairmount	Perennial	6.98	HQ-CWF, MF	Class A Wild Trout Waters	II
WW-T13-16002	UNT to Shingle Run	11.82	41.30506	-76.18719	Ross	Perennial	5.43	HQ-CWF, MF	Class A Wild Trout Waters	II
WW-T03-16003B	Huntington Creek	14.45	41.31272	-76.13810	Ross	Perennial	6.17	HQ-CWF, MF	Class A Wild Trout Waters	II
WW-T49-17001	UNT to Huntsville Creek	21.80	41.33554	-76.00649	Lehman	Perennial	10.05	CWF, MF	Wild Trout Waters	II
WW-T53-17003	UNT to Huntsville Creek	M-0060 0.89	41.35166	-76.01121	Harvey's Lake	Perennial	23.08	CWF, MF	Wild Trout Waters	II

- a: UNT: Unnamed Tributary. UNT name was identified based on review of USGS topographical mapping.
 b: Milepost provided for access roads indicate the point at which the access road meets the proposed pipeline.
 c: PA Water Quality Classification Definition: CWF = Cold Water Fishery; HQ = High Quality; WWF = Warm Water Fishery; EV = Exceptional Value; MF = Migratory Fishery (Chapter 93 Pennsylvania Code). Water quality classifications were identified through a desktop review of available GIS data layers. A waterbody that was not assigned a water quality classification on the GIS data layer was given the same classification as the waterbody it drains into. All water quality classifications shown are designated uses, no existing uses are present in the Project area.
 d: N/A = Not Applicable, no state fishery classification; TS = Trout stocked; PA Fishery Classifications: Approved trout waters; Class A Wild Trout Waters, Wild Trout Waters, WWCW Fisheries Streams (PFBC 2014a, 2014b, and 2014c).
 e: II = Dry Crossing Method, including Flume, Dam and Pump, or Dry Open Cut for waterbodies that are dry at the time of crossing.

In general, if blasting is required at a watercourse crossing, the preparation of the rock for blasting (i.e., drilling shot holes) will not cause sufficient disturbance to displace aquatic organisms and will not increase surface water turbidity, since dry crossing methods will be utilized at each crossing. If in-water blasting is deemed necessary, Transco will implement its Blasting Plan, provided as Attachment 10 of the Transco ECP (**Attachment M**), and the site-specific blasting plan that will be produced for each area requiring blasting, which specifically addresses in-water blasting. In addition, Transco will obtain the required permits, licenses, and approvals and notify agencies in accordance with permit requirements. The Blasting Plan outlines proper precautions and necessary pre-blast planning to be implemented to minimize potential effects. Transco's contractor will also create a detailed, site-specific blasting plan for each area proposed for blasting; each site-specific blasting plan will be consistent with the provisions of the Project-specific Blasting Plan. Immediately following blasting, Transco will remove rock that impedes surface water flow. Furthermore, Transco will implement a two-foot depth of cover within consolidated rock to minimize the amount of blasting required and the duration of construction activity within the affected watercourse.

Spill Control

Inadvertent spills of fluids used during construction, such as fuels, lubricants, and solvents, could contaminate wetland soils and have adverse impacts on wetland vegetation. The Spill Plan for Oil and Hazardous Materials (Transco Spill Plan), provided as Attachment 9 of the Transco ECP (**Attachment M**), will be implemented to minimize the potential for spills and minimize effects from spills. In general, storage of equipment, hazardous materials, chemicals, fuels, lubricating oils, will occur at least 100 feet from wetlands, watercourses, and bodies of water. The Horizontal Directional Drill (HDD) Contingency Plan in Attachment 3 of the ECP (**Attachment M**) addresses inadvertent returns.

Fuel spills that occur during construction, although unlikely, could result in toxicity to aquatic organisms and associated modifications of aquatic habitat, as well as decreased oxygen concentrations. The Transco Spill Plan describes measures that will be implemented by Transco personnel and its contractors to prevent and, if necessary, control any inadvertent spill of hazardous materials that could affect water quality. The Transco Spill Plan will be updated with site-specific information prior to the initiation of construction

activities. Hazardous materials, chemicals, lubricating oils, and fuels used during construction will be stored in upland areas at least 100 feet from surface waters unless otherwise approved by applicable regulatory agencies, and refueling of construction equipment will be conducted at least 100 feet from surface waters unless otherwise approved by applicable regulatory agencies. Additional precautions such as continual monitoring of fuel transfer and use of spill kits will be employed. Disposal of hazardous materials will also be conducted in accordance with the Transco Spill Plan.

Revegetation

Some wetland vegetation will be cut, removed, or crushed during construction. After the completion of construction, wetland areas within the ROW will be restored to preconstruction contours and revegetated where standing water is not present to stabilize disturbed soils. For the pipeline construction ROW and ancillary facilities, Transco proposes to utilize either winter wheat or annual ryegrass as a nurse crop on the ROW from January 1 through May 15 and August 15 through December 31. During the summer months (May 15 through August 15), it is recommended that browntop millet be utilized as the nurse crop. The use of cereal (winter) rye is highly discouraged due to the allopathic effects it could have on the establishment of the permanent crop. It is recommended that annual rye be planted at a nurse rate of 4 pounds per acre and winter wheat at a rate of 10 pounds per acre, individually. Browntop millet should be seeded at a rate of 5 pounds per acre.

Annual ryegrass, winter wheat, and browntop millet are intended to be a temporary cover to enhance soil stability. In wetland areas, restoration activities will involve returning wetlands to pre-construction contours and seeding in non-inundated areas with an approved wetland seed mix. The seed mixes proposed for the Project are included within the **Riparian Area Impact Assessment and Restoration Plan for Luzerne County (Appendix L-2)**, and in the BMPs and Quantities Plan Set, included within **Attachment M** of the revised Application. PEM wetlands, dominated primarily by low-growing sedges, rushes, and other herbaceous vegetation will revert to emergent vegetation following construction, resulting in no permanent change to wetland type. Wetland areas will not be amended with fertilizer, lime, or mulch unless required by applicable federal and state agencies.

Wetlands will be monitored post-construction in accordance with the Transco Procedures (Attachment 18 of the Transco ECP [**Attachment M**]). Revegetation will be considered successful when the vegetative cover returns to at least 80 percent of the type, density, and distribution of the native vegetation in adjacent, undisturbed portions of the wetland. Within three years after construction, Transco will file a report with FERC identifying the status of the wetland revegetation efforts and documenting success as defined in the Transco Procedures.

For any wetland where revegetation is not successful at the end of three years after construction, Transco will develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Transco will continue revegetation efforts and file a report annually documenting progress in these wetlands until wetland revegetation is successful.

Additional avoidance and minimization measures are described in the Transco Procedures, which is included as Attachment 18 of the Transco ECP (**Attachment M**). To minimize adverse impacts at watercourse crossings, the Transco Procedures will be implemented during construction, post-construction restoration, and operation of the Project. In addition, construction activities at watercourse crossings will be performed in accordance with the USACE permit requirements, PA DEP permit requirements, and the FERC Order. The Transco Procedures also outline the plan for correction of deficiencies identified during post-construction monitoring.

Cleanup and Restoration

Upon completion of wetland crossings, Transco will promptly restore wetlands to their original configurations and contours and promptly stabilize disturbed adjacent upland areas. Final wetland elevations will be determined using civil survey (sub-centimeter accuracy) data collected prior to construction. Through these activities, Transco seeks to protect wetlands from sediment transport and restore as quickly as possible. Following construction, Transco will monitor disturbed wetlands and adjacent uplands until restoration and long-term stabilization is documented.

Upon completion of in-stream construction, Transco will restore the stream bed and banks to minimize erosion, washouts and associated turbidity and sedimentation. Transco will

stabilize the stream bed and banks to preconstruction contours such that they are similar to banks at the limits of disturbance. Transco will also utilize pre-construction photographs. Banks will be stabilized using geotextile fabric. **Appendix L-3**, Table 1 identifies each watercourse and the stream restoration detail to be utilized on either bank. A typical detail for streambed restoration is included in the BMPs and Quantities Plan Set within **Attachment M**. The streambed will be restored to grade using native streambed material. To further stabilize the surface water banks, Transco will re-vegetate the banks and riparian areas using approved seed mixes in accordance with the **Riparian Area Impact Assessment and Restoration Plan for Luzerne County within Appendix L-2**. The temporary vegetation will stabilize the area until indigenous riparian species are re-established. If inclement weather limits the effectiveness of reseeding efforts, temporary erosion control measures will be implemented to minimize erosion until conditions are suitable for reseeding. The temporary erosion control measures will be monitored and maintained until conditions are suitable for completion of restoration. No fertilizers, lime, or mulch will be utilized in riparian areas unless required in writing by the PA DEP and USACE permit requirements and the FERC Order.

Following construction, disturbed areas will be reseeded with approved seed mixes in accordance with the Transco Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (Transco Plan), the Transco Procedures (Attachments 17 and 18 of the Transco ECP (**Attachment M**)), and the **Riparian Area Impact Assessment and Restoration Plan for Luzerne County (Appendix L-2)**. Trees and other woody vegetation will be allowed to reestablish naturally within the temporary ROWs and other temporary workspaces that were cleared for construction of the pipeline. The use of soil conservation techniques will avoid and/or minimize erosion and runoff that could potentially affect surface water quality.

Temporary alteration of the ROWs and construction areas is expected to be relatively insignificant compared to the size of drainage areas and sub-watersheds of surface water systems across the Project area. Considering the Project's BMPs for erosion and sediment control measures provided in Attachment 2 of the Transco ECP (**Attachment M**), such as the use of slope breakers, silt fence, and sediment traps, site stabilization during construction, and revegetation, changes in the type of the vegetative cover and shading of surface waters will vary by crossing. Areas with forested riparian zones may experience

temporary or permanent reduction/loss of shading and thermal effects in the vicinity of areas where tree clearing occurs. The construction ROWs will be as narrow as practicable to construct safely, and the area of increased light penetration and increased water temperatures will be limited to a relatively short length of the surface water; therefore, habitat changes within the channel will be minimal. In areas where the forested buffer can regenerate naturally (in the construction ROW outside the permanent ROW), the effect will decrease over time as trees grow and mature and shading increases.

Wetlands

There are ~~5.7685~~ ~~5.7692~~ acres of temporary wetland impacts to PEM wetlands, 1.6330 acres of temporary impacts to PSS wetlands, 2.4405 acres of temporary impacts to PFO wetlands, 0.0995 acre of temporary impacts to PUB wetlands associated with the construction of the pipeline, which will be restored upon completion of construction, allowing the wetlands to revert to the pre-construction vegetation type. The Project will result in ~~0.5651~~ ~~0.5654~~ acre of permanent impacts to PEM wetlands, 0.1472 acre of permanent impacts to PSS wetlands, 1.1795 acres of permanent impacts to PFO wetlands, and 0.0030 acre of permanent impacts to PUB wetlands. There will be no fill placed in wetlands and no permanent loss of wetlands as a result of the Project. Construction workspace has been reduced to 75 feet at most wetland crossings, unless necessary due to site specific constraints. **Attachment P-1, Appendix P-1** provides a table of locations and justifications where ROWs in certain wetlands exceed the 75 foot maximum width recommended by the FERC. Permanent impacts to wetlands are associated with those wetlands located within the new permanent easement which is to be maintained during operation of the pipeline, as directed by the PA DEP. For PFO wetlands, this is considered to be a vegetative class change. Table L(d)-5 details the anticipated impacts to wetlands as a result of the Project.

**Table L(d)-5
 Wetland Impacts Associated with the Atlantic Sunrise Project in Luzerne County**

Resource Name	Chapter 105.17 Wetland Classification	Wetland Cowardin Classification	Temporary Impact area (acres) ^a	Permanent Impact area (acres)	Latitude	Longitude
W-T02-15017	EV	PEM	0.1456	0.0104	41.28435	-76.31096
W-T02-15019A	EV	PEM	0.6823	0.0733	41.28621	-76.29380
W-T02-15022A	Other	PEM	0.4176	0.0393	41.28938	-76.27740
W-T02-15023A	Other	PEM	0.2425 ^b	0.0819 ^b	41.29019	-76.27318
W-T02-16001	EV	PEM	0.1088	0.0003	41.29549	-76.25150
W-T02-16003A / W-T02-16003A-1	EV	PEM	0.3181	0.1405	41.29547	-76.24357
W-T02-16002	EV	PEM	0.0282	0.0026	41.29770	-76.23714
W-T05-16004	EV	PEM	0.6284	0.0210	41.30088	-76.21806
W-T05-16005	Other	PEM	0.0807	0.0000	41.30269	-76.20816
W-T11-16001A	Other	PEM	0.1141	0.0119	41.30350	-76.20413
W-T11-16002A / W-T11-16002A-1 / W-T11-16002A-2 / W-T11-16002A-3	EV	PEM	0.0532	<0.0001	41.30395	-76.19907
W-T13-16002A	Other	PEM	0.0184	0.0000	41.30444	-76.19260
W-T13-16001	EV	PEM	0.0458	0.0032	41.30496	-76.18715
W-T05-16003 / W-T05-16003-2	EV	PEM	0.1228	0.0046	41.30722	-76.16239
W-T05-16002	Other	PEM	0.1250	0.0000	41.30975	-76.15292
W-T05-16001	Other	PEM	0.0303	0.0000	41.31003	-76.15194
W-T03-16005 / W-T03-16005-1	EV	PEM	0.3176	0.0186	41.31074	-76.14957
W-T03-16004 / W-T03-16004-1	EV	PEM	0.2063	0.0099	41.31124	-76.14762
W-T03-16003	Other	PEM	0.0525	0.0000	41.31186	-76.14449
W-T03-16002A / W-T03-16002A-1 / W-T03-16002A-2	EV	PEM	0.1880	0.0012	41.31431	-76.12842
W-T03-16001	EV	PEM	0.0935	0.0028	41.31742	-76.11312
W-T03-17012	EV	PEM	0.1647	0.0114	41.32008	-76.09803

**Table L(d)-5
 Wetland Impacts Associated with the Atlantic Sunrise Project in Luzerne County**

Resource Name	Chapter 105.17 Wetland Classification	Wetland Cowardin Classification	Temporary Impact area (acres) ^a	Permanent Impact area (acres)	Latitude	Longitude
W-T03-17011	EV	PEM	0.0636	0.0020	41.32012	-76.09732
W-T03-17010	EV	PEM	0.0282	0.0000	41.32309	-76.08763
W-T03-17009-1	EV	PEM	0.0781	0.0038	41.32438	-76.07979
W-T03-17008A	EV	PEM	0.0994	0.0000	41.32591	-76.07129
W-T03-17007A	EV	PEM	0.1391	0.0053	41.32737	-76.05748
W-T03-17006	Other	PEM	0.0083	0.0000	41.32731	-76.05273
W-T03-17005A	Other	PEM	0.1221	0.0127	41.32728	-76.04371
W-T05-17001A	EV	PEM	0.3633	0.0263	41.32708	-76.03736
W-T03-17003	Other	PEM	0.0601	0.0027	41.32770	-76.01594
W-T03-17001	Other	PEM	0.0806	0.0000	41.32871	-76.01240
W-T49-17001	Other	PEM	0.0226	0.0000	41.33490	-76.00731
W-T07-17003A	EV	PEM	0.1984	0.0347	41.34020	-76.00739
W-T07-17006	Other	PEM	0.1307	0.0199	41.37377	-75.98279
W-T24-17001A-1	Other	PEM	0.1896	0.0240	41.36015	-75.99356
W-T76-18021-3	EV	PEM	0.0007	0.0008	41.38352	-75.98012
W-T76-18021-3	EV	PEM	0.0007	0.0008	41.38352	-75.98012
Total PEM Wetland Impacts			5.7685 5.7692	0.5651 0.5654		
W-T02-15019B	EV	PSS	0.5479	0.0178	41.28610	-76.29485
W-T11-16001B	Other	PSS	0.0783	0.0048	41.30358	-76.20380
W-T03-16002B / W-T03-16002B-1	EV	PSS	0.0743	0.0090	41.31442	-76.12844
W-T05-17001B	EV	PSS	0.5671	0.0355	41.32705	-76.03625
W-T07-17003B-1	EV	PSS	0.3325	0.0760	41.34141	-76.00659
W-T71-18002B-1	EV	PSS	0.0329	0.0041	41.36511	-75.99410
Total PSS Wetland Impacts			1.6330	0.1472		
W-T02-15019C	EV	PFO	0.2015	0.0401	41.28604	-76.29527
W-T02-15020C	Other	PFO	0.4409	0.3039	41.28669	-76.28634
W-T02-15022C	Other	PFO	0.0618	0.0202	41.28933	-76.27712
W-T02-15023C ^b	Other	PFO	0.0086 ^b	0.0000	41.29006	-76.27353
W-T11-16001C-1	Other	PFO	0.0528	0.0084	41.30377	-76.20248
W-T13-16002C	Other	PFO	0.1294	0.0483	41.30453	-76.19302
W-T03-17008C	EV	PFO	0.3485	0.0920	41.32604	-76.07127
W-T03-17007C	EV	PFO	0.0316	0.0000	41.32753	-76.05807

**Table L(d)-5
 Wetland Impacts Associated with the Atlantic Sunrise Project in Luzerne County**

Resource Name	Chapter 105.17 Wetland Classification	Wetland Cowardin Classification	Temporary Impact area (acres) ^a	Permanent Impact area (acres)	Latitude	Longitude
W-T07-17001	EV	PFO	0.7813 0.7814	0.4331 0.4330	41.33158	-76.00955
W-T07-17003C / W-T07-17003C-1 / W-T07-17003C-2	EV	PFO	0.2521	0.1859	41.33936	-76.00708
W-T51-17001C	Other	PFO	0.0866	0.0426	41.34632	-76.00752
W-T51-17002	EV	PFO	0.0454	0.0050	41.35286	-76.01011
Total PFO Wetland Impacts			2.4405	1.1795		
WB-T13-16002	Other	PUB	0.0754	0.0000	41.30443	-76.19306
WB-T03-17002	HQ-CWF, MF	PUB	0.0241	0.0030	41.32295	-76.08759
Total PUB Wetland Impacts			0.0995	0.0030		
Source: http://www.pacode.com/secure/data/025/chapter105/s105.17.html https://www.fws.gov/wetlands/Data/Wetland-Codes.html Key: PEM = Palustrine Emergent PSS = Palustrine Shrub-Shrub PFO = Palustrine Forested PUB = Palustrine Unconsolidated Bottom EV = Exceptional Value a: <i>Temporary impacts to PFO wetlands include temporal conversion from forested to scrub-shrub or emergent wetland. Within this wetland, a 30-foot-wide corridor centered over the pipeline will be permanently converted from forested to scrub-shrub or emergent wetland; the remainder of the wetland will be allowed to fully revert back to PFO.</i> c: <i>This feature will be crossed using an HDD within the LOD shown on the drawing. However, the impacts shown are for the contingency, or secondary, crossing method, since those impacts are larger. The drawing showing the LOD and resource impacts for the contingency crossing method is provided in Attachment H-3.</i>						

Transco will use the conventional open-cut pipeline crossing method in wetlands where soils are unsaturated and able to support construction equipment at the time of crossing. This method requires segregation of topsoil from subsoil along the trench line. Where present The Transco Procedures (ECP Attachment 18, provided within **Attachment M** of this Application) and Agricultural and Construction Monitoring Plan (ECP Attachment 6, provided within **Attachment M** of this Application) indicate that the top 12 inches of topsoil from wetland and agricultural areas disturbed by trenching will be segregated from subsoil,

except in areas where standing water is present, soils are saturated, or where shallow depth to bedrock conditions exist. These exceptions will be identified via visual assessment during grading and documented in the field with the Environmental and/or Agricultural Inspector. Once this is done Transco will conduct trench excavation, pipe laying, backfilling, and grade restoration. Immediately after backfilling is complete, Transco will replace the segregated topsoil to its original horizon location and install applicable erosion control measures. Transco will use the conventional open-cut wetland construction method for crossing wetlands with saturated soils or soils unable to support construction equipment without considerable soil disturbance. Prior to crossing and movement of construction equipment through these wetlands, Transco will stabilize the ROW using equipment mats to allow for a stable, safe working condition and to prevent significant rutting/soil disturbance. Transco will temporarily store trench spoil in a ridge along the pipeline trench, leaving gaps as appropriate intervals to provide for natural circulation or drainage of water. Topsoil will not be segregated where standing water is present or soils are saturated.

While excavating the trench, Transco will attempt to assemble the pipeline in a staging area located in an upland area unless the wetland is dry enough to support skids and pipe. Transco will then move the pipe to the ROW. Pipe stringing and fabrication may occur within the wetland adjacent to the trench or adjacent to the wetland in an approved ATWS. After lowering the pipeline into the trench, Transco will work from equipment mats to perform backfilling, final cleanup, and grading.

Construction in inundated wetland areas may require the push-pull technique. The push-pull technique can be used in large inundated wetland areas (>300 feet crossing length) where sufficient water is present to float the pipeline in the trench and where grade elevation over the length of the push-pull area will not require damming to maintain adequate water levels for flotation of the pipe. Transco will use this technique when inundated conditions prevent the use of conventional open-cut wetland construction techniques.

Operation of construction equipment through wetlands will be limited to only that necessary for each stage of pipeline installation (e.g., clearing, trenching). Topsoil segregation techniques will be used in wetlands that are not saturated or inundated to preserve the

seed bank and to facilitate successful restoration. Wetland crossing methods will be determined based on site-specific conditions at the time of crossing. Wetlands with soils that can support construction equipment may be crossed using the conventional open-cut method, as described below, with the use of timber mats to prevent soil rutting. In forested wetlands, Transco will minimize tree clearing to the extent practicable while maintaining safe construction conditions. Typical drawings for the wetland crossings are provided in Attachment 2 of the Transco ECP (**Attachment M**).

Some wetland vegetation will be cut, removed, or crushed during construction. After the completion of construction, wetland areas within the ROW will be restored to preconstruction contours and revegetated with annual ryegrass where standing water is not present to stabilize disturbed soils. Annual ryegrass is intended to be a temporary cover to enhance soil stability. In wetland areas, restoration activities will involve returning wetlands to pre-construction contours and seeding in non-inundated areas with an approved wetland seed mix. PEM wetlands, dominated primarily by low-growing sedges, rushes, and other herbaceous vegetation will revert to emergent vegetation following construction, resulting in no permanent change to wetland type. Wetland areas will not be amended with fertilizer, lime, or mulch unless required by appropriate federal and state agencies.

Upon completion of wetland crossings, Transco will restore wetlands to their original configurations and contours and stabilize disturbed adjacent upland areas. Through these activities, Transco seeks to protect wetlands from sediment transport and restore native hydrophytic vegetation as quickly as possible. Following construction, Transco will monitor disturbed wetlands and adjacent uplands until restoration and long-term stabilization is documented per the requirements of the FERC Order and other applicable regulatory approvals.

Revegetation will be considered successful when the vegetative cover returns to at least 80 percent of the type, density, and distribution of the native vegetation in adjacent, portions of the wetland not disturbed by construction of the Project.

Additional wetland avoidance and minimization measures are described in the Transco Procedures, which is included as Attachment 18 of the Transco ECP (**Attachment M**) as well as the Alternatives Analysis for this application (**Attachment P-1**).

Compensatory Mitigation for Wetland Impacts

No permanent fill will be placed in wetlands as a result of this Project. Mitigation will be required for permanent conversion of vegetation cover type for PFO and PSS wetlands and for temporary conversion of vegetation cover type for PFO wetlands. The following impact mitigation ratios were determined in coordination with the PA DEP and USACE: 2.5:1 for EV PFO wetlands, 2:1 for non-EV PFO wetlands, 1.75:1 for EV PSS wetlands, and 1.5:1 for non-EV PSS wetlands.

The Project will result in 3.76 acres of impacts to EV PSS and EV and non-EV PFO wetlands in Luzerne County (excluding temporary impacts to PSS wetlands). Of the 3.76 wetland impact acres, 0.14 are EV PSS, 1.20 are non-EV PFO, and 2.42 are EV PFO wetland impacts. Impact totals in Luzerne County were aggregated and rounded to two significant digits to determine mitigation needs. Therefore while 0.0048 acre of permanent non-EV PSS impact is proposed, this impact amount rounds to 0.00 and is not reflected in the mitigation totals. Mitigation will be required for 3.76 acres of wetland impacts within Luzerne County which will be mitigated for at the Headwaters to Larrys Creek and Briar Creek Mitigation Sites as detailed in Attachments Q-1 and Q-2. Transco proposes off-site mitigation for $[(1.20 \text{ acres} \times 2 \text{ ratio} = 2.40 \text{ acres}) + (2.42 \text{ acres} \times 2.5 \text{ ratio} = 6.05 \text{ acres}) + (0.14 \text{ acres} \times 1.75 \text{ ratio} = 0.25 \text{ acres}) = 8.70 \text{ acres}]$. The mitigation site will provide sufficient acreage to compensate for the above-listed impacts, with additional ecological benefits beyond the required mitigation. Some of the temporary and permanent PFO impact areas are also being replanted on-site, providing double mitigation for these areas.

Transco has provided a Mitigation Master Plan and a Site Specific Mitigation Plan for the Headwaters of Larrys Creek PRM site in Lycoming County and the Briar Creek PRM site in Columbia County. Under the authorization of this Chapter 105 permit application, Transco is seeking authorization to construct the Mitigation Site for this Project. There are no mitigation site impacts in Luzerne County. The PRM Plans are provided as **Attachment Q-2**.

The USACE Highway Methodology Workbook Supplement: Wetland Functions and Values (Supplement, 1993) was used to evaluate the functions and values of the wetlands at the impact site and the PRM sites. The Supplement is a qualitative approach to describing the physical characteristics of and identifying the functions and values exhibited by a wetland.

The Wetland Function-Value Evaluation Form in the Supplement was completed at the PRM Sites in order to capture the existing or pre-restoration conditions at the PRM Sites as well as the anticipated ecological lift the site will experience as a result of the restoration activities. The baseline conditions of the existing wetlands at the PRM Sites already represent a functional uplift with respect to the functions and values as compared to the impacted wetlands for which the PRM Sites will be providing mitigation. The functional uplift will further be improved through the proposed restoration efforts. The wetland functions and values assessments performed at the Project impact locations and the PRM Sites indicate that the mitigation site, once restored, will compensate for and replace the functions and values impacted as a result of the Project by providing improved wildlife habitat, flood flow alteration, and nutrient removal/retention (the top three functions and values lost as a result of Project construction) at comparatively high levels (see **Attachment Q-1**).

Headwaters of Larrys Creek PRM Site

Currently, the existing condition of the land within the proposed Headwaters of Larrys Creek Mitigation Site exists in a degraded state. Environmental resources including wetlands and waters within the PRM Site are currently surrounded by active agricultural land and continue to be degraded by the surrounding landscape uses such mowing, and maintenance of non-native pasture grasses. The on-site stream has been relocated to make way for pasturing activities in the valley bottom and is now eroding into the valley wall in multiple locations. Consequently, eroding stream banks are causing sedimentation of Larry Creek downstream. Existing vegetation is presently dominated by non-native Eurasian pasture grasses. Based on the USACE Supplement methodology for identifying wetland functions and values, the wetlands within the PRM Site are currently collectively suitable for four functions and values (**Attachment Q-2**, Appendix F: Wetland Functions and Values Assessment Forms). Given the current degraded state of the aquatic

resources on-site, only one of the four collective suitable functions and values (including flood flow alteration, sediment stabilization, nutrient removal, and production export) is considered a principal function across the larger system.

Post restoration, it is anticipated that the wetlands within the PRM Site will be collectively suitable for ten functions and values, of which five will be performing at principal levels (these include nutrient removal, which was assessed as being principal prior to restoration activities, in addition to flood flow alteration, sediment/toxicant retention, sediment/shoreline stabilization, and wildlife habitat). As such, the PRM Site will exhibit an ecological uplift that will not only enhance the existing principal functions and values, but will also provide additional principal functions and values. Ecological functionality is therefore expected to improve considerably as a result of the proposed restoration efforts.

Historic farming activities resulted in the relocation of portions of the on-site stream against the valley way. The stream is now deeply incised, and has eroding banks that are contributing sediment to the stream system. Relocating the stream to the center of the valley will restore stable channel size, pattern and profile, and will restore hydrology between the stream channel and historic (newly re-established) floodplain wetlands. Sub-surface grade control structures will be installed to prevent headcuts from forming and creating instability downstream. The restored system will provide improved stream and floodplain interaction within the valley bottom while removing sources of sedimentation, improving the floodflow alteration, sediment/toxicant retention, sediment/shoreline stabilization, nutrient removal, and wildlife habitat functions as described in more detail below. Over time as the re-established wetlands mature into a forested state, they will restore additional sediment/toxicant retention, nutrient removal, and sediment stabilization functionality to the system.

Removing non-native vegetation and re-planting the PRM Site with a native-community will increase the vegetative diversity and density of the PRM Site, enhancing the quality and quantity of wildlife habitat available within the PRM Site. Native plantings and seeding proposed across the entire PRM Site will improve the effectiveness of the wetlands and reduce flood damage by improving water retention for prolonged periods following precipitation events and gradually releasing floodwaters. Increased vegetative diversity, and density will facilitate the retention of greater volumes of water, sediment,

nutrients and pathogens than under normal or average rainfall conditions, supporting additional stability and buffering capacity of the wetland ecological system. Post restoration, the PRM Site wetlands will be significantly more effective in nutrient removal/retention/ transformation as they will be better able to trap nutrients from surface runoff and process them into other forms or trophic levels. Enhancement plantings will include larger trees and shrubs, which will more effectively withstand larger flood events and erosive stresses. The post-restoration wetland system will exhibit a diverse plant community structure and will offer a greater and wider range of usable products for wildlife, improving production export functionality. Although the PRM Site is located on private land and will not likely be accessible to the public, Larry Creek is classified as an important natural trout reproduction fishery and a trout-stocked fishery. The PRM Site therefore plays an important role in the greater ecological system and watershed.

Briar Creek PRM Site

Currently, the existing condition of the land within the proposed Briar Creek PRM Site exists in a degraded state. Environmental resources including wetlands and waters within the Briar Creek PRM Site are currently surrounded by active agricultural land and continue to be degraded by the surrounding landscape uses. The majority of the Briar Creek PRM Site is heavily colonized by invasive and/or non-native species including reed canary grass (*Phalaris arundinacea*) Japanese stiltgrass (*Microstegium vimineum*), multiflora rose (*Rosa multiflora*), and oriental bittersweet (*Celastrus orbiculatus*). In the uplands surrounding the Briar Creek PRM Site, invasive and/or non-native species threatening the site include garlic-mustard (*Alliaria petiolata*), multiflora rose, border privet (*Ligustrum obtusifolium*), and reed canary grass. By following the USACE Supplement for identifying wetland functions and values, it was determined that the complex of hydrologically connected wetlands identified within the PRM Site are currently collectively suitable for eight functions and values (**Appendix F: Wetland Function and Values Assessment Forms**).

Given the current degraded state of the wetland complex and its immediate surroundings, only six of the eight collective suitable functions and values (of which include flood flow alteration, fish and shellfish habitat, sediment/toxicant retention, sediment stabilization, and wildlife habitat) are considered principal functions across the larger wetland complex.

Post restoration, it is anticipated that the wetlands within PRM Site will be collectively suitable for eleven functions and values, of which eight of those will be performing at principal levels (these include the six that are principal prior to restoration activities, in addition to the following: nutrient removal, production export, and uniqueness/heritage). As such, PRM Site will exhibit an ecological uplift that will not only enhance the existing principal functions and values, but will also allow the wetland to exhibit additional principal functions and values. Current functionality is expected to improve considerably as a result of restoration efforts.

Removing invasive and non-native vegetation and re-planting the PRM Site with a native-community will increase the vegetative diversity and density of the PRM Site. This restoration activity proposed for the PRM Site will most notably enhance the quality and quantity of wildlife habitat available within the PRM Site. Native plantings and seeding proposed across the entire PRM Site will improve the effectiveness of the wetland in reducing flood damage by increasing water retentions for prolonged periods following precipitations events and the gradual release of floodwaters. Increased vegetative diversity, including plant community structure, and density will be able to retain higher volumes of water than under normal or average rainfall conditions, supporting additional stability of the wetland ecological system and its buffering characteristics, and thereby providing social and economic value related to erosion and flood prone areas. Sources of excess sediment exist surrounding the wetland, and with the proposed restoration activities, this wetland will be better capable of reduces or preventing degradation of water quality as it will act as a trap for sediments, toxicants and/or pathogens in runoff in runoff water. Post-restoration, wetlands at the PRM Site will become significantly more effective for nutrient removal/retention/transformation as they will be better able to trap nutrients in runoff water and process then into other forms or trophic levels. The enhancement and establishment of improved vegetative density and diversity will be enable the wetland to utilize the nutrients. Enhancement of the wetland and riparian habitats surrounding the waters within the PRM Site will improve the effectiveness as a streambank stabilizer, complete with large trees and shrubs that post-restoration, will be more effectively able to withstand larger flood events or erosive incidents. Post restoration, the wetland will exhibit a higher degree of plant community structure, density and diversity, and will offer greater usable products for living organism, thereby improving production export functionality. Although the PRM Site is located on private land and will

likely not be accessible to the public, the PRM Site is associated with special value streams (naturally reproducing trout streams, trout stocked streams) and thereby plays an important role in the ecological system of the areas. (See **Attachment Q-1**).

Watercourses and Bodies of Water

Fifty-nine watercourses will be crossed during construction of the pipeline in Luzerne County. The centerline of the pipeline will cross each watercourse utilizing the construction method indicated in the table below. Temporary construction bridges will be used to cross the streams with equipment, as necessary, during construction. Temporary stream impacts total 1.3360 acres of perennial streams, and approximately 0.3298 acre of intermittent and ephemeral streams. Permanent stream impacts are defined by the placement of the pipeline and permanent operation easement as directed by PA DEP, and total 0.1141 acre of perennial streams and 0.0288 acre of intermittent and ephemeral streams. Transco is proposing to cross watercourses using either dam-and-pump, flume, or conventional bore construction method (see also **Attachment P-1, Appendix P-1**).

No fill or water obstructions will be added to streams as a part of this Project, therefore no loss of stream functions and values is expected to occur. Impacts are detailed in Table L(d)-6.

Table L(d)-6
 Stream Impacts Associated with the Atlantic Sunrise Project in Luzerne County

Resource ID	Resource Name	Chapter 93 Classification ^a	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width)		Temporary Impact area (Acres)	Permanent Impact Dimensions (Length x Width)		Permanent Impact area (Acres)	Latitude	Longitude	Watercourse Crossing Method
					(Feet) ^b	(Feet) ^b		(Feet) ^b	(Feet) ^b				
WW-T02-15016	Marsh Run	CWF, MF	Perennial	Wild Trout Waters	105.23	71.08	0.0939	8.69	71.08	0.0080	41.28429	-76.31138	Dam-and-Pump
WW-T02-15017	Maple Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	210.50	12.53	0.0490	6.12	12.53	0.0014	41.28609	-76.29438	Dam-and-Pump
WW-T02-15017A	UNT to Maple Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	85.86	13.46	0.0131	9.49	13.46	0.0015	41.28626	-76.29408	Dam-and-Pump
WW-T02-15018	Kitchen Creek	HQ-CWF, MF	Perennial	Approved Trout Waters; Class A Wild Trout Waters	93.04	52.52	0.0943 ^c	5.34	52.52	0.0060	41.29065	-76.27004	Dam-and-Pump ^e
WW-T02-16002	Phillips Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	98.98	47.33	0.0653	6.98	47.33	0.0054	41.29814	-76.23494	Dam-and-Pump
WW-T03-16001	Fades Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	92.43	22.16	0.0371	5.86	22.16	0.0033	41.31745	-76.11341	Dam-and-Pump
WW-T03-16003B	Huntington Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	85.91	38.64	0.0541 ^c	6.17	38.64	0.0047	41.31272	-76.13810	Dam-and-Pump ^e
WW-T03-16003C	UNT to Huntington Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	76.18	5.79	0.0110	5.09	5.79	0.0006	41.31104	-76.14836	Conventional Bore
WW-T03-17001	UNT to Harveys Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	75.25	31.58	0.0554	5.00	31.58	0.0037	41.32735	-76.04637	Dam-and-Pump
WW-T03-17002A	UNT to Harveys Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	100.19	48.88	0.0707	8.85	48.88	0.0057	41.32706	-76.03803	Dam-and-Pump
WW-T03-17002B	UNT to Harveys Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	158.61	22.82	0.0178	6.39	22.82	0.0012	41.32708	-76.03765	Dam-and-Pump
WW-T03-17003	UNT to Harveys Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	136.88	18.64	0.0310	7.45	18.64	0.0023	41.32748	-76.05808	Dam-and-Pump
WW-T03-17004	Harveys Creek	HQ-CWF, MF	Perennial	Approved Trout Waters; Wild Trout Waters	84.73	52.37	0.0734	6.05	52.37	0.0060	41.32608	-76.07080	Dam-and-Pump
WW-T03-17006	UNT to Paint Spring Run	HQ-CWF, MF	Perennial	Wild Trout Waters	42.41	5.77	0.0045	0.00	0.00	0.0000	41.32298	-76.08764	Temporary Construction Crossing
WW-T03-17005	Paint Spring Run	HQ-CWF, MF	Perennial	Wild Trout Waters	75.60	21.57	0.0343	5.57	21.57	0.0025	41.32433	-76.07999	Dam-and-Pump
WW-T03-17008	Pikes Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	92.05	19.37	0.0440	5.00	19.37	0.0023	41.31990	-76.09825	Conventional Bore
WW-T05-16001	Mitchler Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	76.94	13.35	0.0289	5.23	13.35	0.0017	41.30724	-76.16320	Dam-and-Pump
WW-T05-16002	UNT to Mitchler Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	95.04	13.73	0.0230	6.13	13.73	0.0015	41.30680	-76.16629	Dam-and-Pump
WW-T05-16003	Lick Branch	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	73.69	11.64	0.0194	5.23	11.64	0.0014	41.30103	-76.21739	Dam-and-Pump
WW-T07-17004	UNT to Leonard Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	72.76	16.71	0.0277	10.01	16.71	0.0038	41.36536	-75.99249	Dam-and-Pump
WW-T11-16001	Arnold Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	75.07	27.28	0.0447	5.00	27.28	0.0031	41.30406	-76.19877	Dam-and-Pump
WW-T11-16001B	UNT to Arnold Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters; Wild Trout Waters	17.58	1.49	0.0001	0.00	0.00	0.0000	41.30418	-76.19873	Temporary Construction Crossing
WW-T11-16001D	UNT to Arnold Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	84.59	9.69	0.0253	5.21	9.69	0.0012	41.30406	-76.19938	Dam-and-Pump

Table L(d)-6
 Stream Impacts Associated with the Atlantic Sunrise Project in Luzerne County

Resource ID	Resource Name	Chapter 93 Classification ^a	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width)		Temporary Impact area (Acres)	Permanent Impact Dimensions (Length x Width)		Permanent Impact area (Acres)	Latitude	Longitude	Watercourse Crossing Method
					(Feet) ^b	(Feet) ^b		(Feet) ^b	(Feet) ^b				
WW-T13-16001	Shingle Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	78.61	13.72	0.0270	5.28	13.72	0.0016	41.30557	-76.18063	Dam-and-Pump
WW-T13-16002	UNT to Shingle Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	92.17	8.59	0.0174	5.43	8.59	0.0010	41.30506	-76.18719	Flume
WW-T17-18001	UNT to Leonard Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	94.64	90.27	0.1721	13.10	90.27	0.0207	41.37502	-75.97988	Dam-and-Pump
WW-T24-15001	Crooked Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	75.24	11.67	0.0235 ^c	5.01	11.67	0.0014	41.29123	-76.26781	Dam-and-Pump ^c
WW-T49-17001	UNT to Huntsville Creek	CWF, MF	Perennial	Wild Trout Waters	68.84	9.51	0.0143	10.05	9.51	0.0022	41.33554	-76.00649	Conventional Bore
WW-T49-17003	UNT to Harveys Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	93.10	5.40	0.0107	5.40	5.40	0.0006	41.32708	-76.03608	Flume
WW-T53-17003	UNT to Huntsville Creek	CWF, MF	Perennial	Wild Trout Waters	142.43	20.70	0.0233	23.08	20.70	0.0056	41.35166	-76.01121	Dam-and-Pump
WW-T65-16001	UNT to Huntington Creek	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	101.20	4.67	0.0098	9.97	4.67	0.0010	41.31268	-76.13831	Dam-and-Pump ^c
WW-T90-16001	UNT to Mitchler Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	44.91	29.26	0.0230	6.49	29.26	0.0029	41.30725	-76.16263	Dam-and-Pump
WW-T90-16002	UNT to Mitchler Run	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	73.63	6.30	0.0110	5.24	6.30	0.0007	41.30717	-76.16365	Dam-and-Pump
WW-T93-16001	UNT to Huntsville Creek	CWF, MF	Perennial	Wild Trout Waters	100.22	16.65	0.0287	11.17	16.65	0.0037	41.33089	-76.00997	Flume
WW-T93-17001	UNT to Huntsville Creek	CWF, MF	Perennial	Wild Trout Waters	35.33	17.85	0.0155	0.00	0.00	0.0000	41.33075	-76.01018	Temporary Construction Crossing
WW-T76-18009	UNT to Leonard Creek	HQ-CWF, MF	Perennial	Wild Trout Waters	80.81	23.38	0.0417	12.00	23.38	0.0054	41.38350	-75.98020	Dam-and-Pump
Perennial Stream Impacts							1.3360			0.1141			
WW-T05-16001A	UNT to Mitchler Run	HQ-CWF, MF	Ephemeral	Class A Wild Trout Waters	90.55	7.56	0.0144	5.91	7.56	0.0008	41.30726	-76.16299	Dam-and-Pump
WW-T02-16001	UNT to Phillips Creek	HQ-CWF, MF	Intermittent	Class A Wild Trout Waters	112.67	11.23	0.0279	5.44	11.23	0.0013	41.29778	-76.23757	Dam-and-Pump
WW-T03-16002	UNT to Huntington Creek	HQ-CWF, MF	Ephemeral	Wild Trout Waters	172.68	10.89	0.0142	18.13	10.89	0.0023	41.31456	-76.12746	Dam-and-Pump
WW-T03-16002A	UNT to Huntington Creek	HQ-CWF, MF	Intermittent	Wild Trout Waters	88.70	11.18	0.0177	5.83	11.18	0.0013	41.31433	-76.12881	Dam-and-Pump
WW-T03-16003	UNT to Huntington Creek	HQ-CWF, MF	Ephemeral	Class A Wild Trout Waters	80.87	25.70	0.0433 ^c	5.27	25.70	0.0030	41.31281	-76.13759	Dam-and-Pump ^c
WW-T03-17002	UNT to Harveys Creek	HQ-CWF, MF	Intermittent	Wild Trout Waters	123.45	16.65	0.0357	6.52	16.65	0.0018	41.32710	-76.03831	Dam-and-Pump
WW-T03-17007	UNT to Pikes Creek	HQ-CWF, MF	Ephemeral	Class A Wild Trout Waters	77.15	16.72	0.0331	5.40	16.72	0.0020	41.32021	-76.09718	Dam-and-Pump
WW-T07-17002C	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	74.26	14.42	0.0249	10.61	14.42	0.0033	41.34237	-76.00552	Dam-and-Pump
WW-T07-17003	UNT to Leonard Creek	HQ-CWF, MF	Intermittent	Wild Trout Waters	85.52	12.81	0.0225	10.79	12.81	0.0029	41.36493	-75.99447	Dam-and-Pump
WW-T08-17001	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	74.71	15.69	0.0229	10.48	15.69	0.0036	41.34550	-76.00674	Dam-and-Pump
WW-T51-17001	UNT to Huntsville Creek	CWF, MF	Ephemeral	Wild Trout Waters	52.90	1.89	0.0014	17.00	1.89	0.0004	41.33910	-76.00692	Dam-and-Pump

Table L(d)-6
 Stream Impacts Associated with the Atlantic Sunrise Project in Luzerne County

Resource ID	Resource Name	Chapter 93 Classification ^a	Stream Type	Stream PFBC Trout Status	Temporary Impact Dimensions (Length x Width)		Temporary Impact area (Acres)	Permanent Impact Dimensions (Length x Width)		Permanent Impact area (Acres)	Latitude	Longitude	Watercourse Crossing Method
					(Feet) ^b	(Feet) ^b		(Feet) ^b	(Feet) ^b				
WW-T52-17001	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	38.74	17.70	0.0093	0.00	0.00	0.0000	41.34037	-76.00746	Temporary Construction Crossing
WW-T52-17002	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	63.56	6.04	0.0072	10.37	2.07	0.0003	41.33953	-76.00719	Temporary Construction Crossing
WW-T53-17002	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	73.84	14.04	0.0200	10.40	14.04	0.0032	41.35134	-76.01101	Dam-and-Pump
WW-T53-17003B	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	80.94	0.05	0.0198	10.22	0.05	0.0009	41.35179	-76.01109	Dam-and-Pump
WW-T53-17004	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	77.18	5.39	0.0089	10.76	5.39	0.0012	41.35217	-76.01072	Dam-and-Pump
WW-T65-18001	UNT to Leonard Creek	HQ-CWF, MF	Ephemeral	Wild Trout Waters	67.87	2.08	0.0029	10.50	2.08	0.0005	41.37898	-75.97773	Dam-and-Pump
WW-T90-17002	UNT to Huntsville Creek	CWF, MF	Intermittent	Wild Trout Waters	17.13	9.94	0.0037	0.00	0.00	0.0000	41.35265	-76.01005	Temporary Construction Crossing
Ephemeral and Intermittent Stream Impacts							0.3298			0.0288			

Source:
<http://www.pacode.com/secure/data/025/chapter93/chap93toc.html>
http://www.fishandboat.com/waters_trout.htm

a: CWF = Cold Water Fishery; MF = Migratory Fishes; HQ = High Quality.
 b: Widths are reported as the maximum width for the feature. Stream lengths are reported on the impact maps as the sum of the permanent and temporary lengths.
 c: This feature will be crossed using an HDD within the LOD shown on the drawing. However, the impacts shown are for the contingency, or secondary, crossing method, since those impacts are larger. The drawing showing the LOD and resource impacts for the contingency crossing method is provided in Attachment H-3.

Dam-and-Pump Crossing Method

The dam-and-pump method for crossing surface waters temporarily diverts flow around the construction workspace while maintaining downstream flow. Transco will install dams upstream and downstream of the proposed trench and then use pumps and hoses to convey flow around the in-stream workspace to create a dry work area. The pumped water will be discharged downstream of the construction workspace. Pumps will be sized to accommodate flow based on the size of the tributary watershed. Spare pumps will be on-site for use in case the in-use pump mechanically fails during construction. Once the dam-and-pump equipment is in place and active, Transco will excavate the trench and install the pipeline in the dry ditch.

Flume Crossing Method

When using a flume crossing, Transco will install flume pipe(s) over the crossing location prior to trenching. Transco will maintain these pipes until restoration of the watercourse is complete. Transco will use flumes of a size and quantity sufficient to maintain the maximum anticipated downstream flows per the applicable regulations. Transco will then thread the natural gas pipe under the flume pipe(s), and backfill the ditch while flows are maintained through the flume pipe(s) and downstream.

Conventional Bore Crossing Method

Conventional bore allows for trenchless construction across an area but is applicable to shorter and shallower crossings than those requiring the HDD method. To complete a conventional bore, Transco will excavate a pit on either side of the stream to provide a work area for the equipment. Transco will then use a boring machine to bore to a diameter equal to the diameter of the pipe (or casing, if required) at the depth of pipeline installation and push the pipeline through the bore to the opposite pit. The conventional bore crossing method requires level temporary workspaces on either side of the crossing for pit excavation and boring machine operation. As a result, conventional bore is frequently infeasible due to adjacent slopes or wetlands.

Transco proposes to use the conventional bore method to cross an unnamed tributary to Huntington Creek and Pikes Creek in Luzerne County. Each of these watercourse crossings are located immediately adjacent to primary roadways that will be crossed using the conventional bore method. In each case, the bore will be extended to also cross the

adjacent watercourses and bodies of water, such that the entry and exit pit of the bore will not be located within the wetland. These crossings are feasible locations for conventional bore due to absence of steep gradients or wetlands adjacent to the stream and road and the presence of suitable work areas for the setup and operation of a boring machine.

If any of the above-referenced HDDs are unsuccessful, Transco will implement the respective Contingency Plan, which are included in the County-Specific Impact Mapping (**Attachment H-3**). These drawings include E&S BMPs that are specific to the contingency crossing method, which are also included within the E&S Plans within Attachment M. Additionally, the Chapter 105 Impact Table (**Attachment E-2**) included temporary watercourse, wetland, and floodplain impacts that would be associated with the use of the contingency crossing methods, which will allow for the implementation of the contingency crossing methods without requiring the processing of permit amendments prior to the initiation of the crossing method.

Unless otherwise approved, Transco will adhere to time of year restrictions on in-stream construction for those streams with trout designations as set by the PFBC. For wild trout waters, no in-stream work will occur between October 1 and December 1. This will be extended for October 1 to April 1 for those designated as Class A Wild Trout Streams. Transco has coordinated with the PFBC to confirm the time of year restrictions that are applicable to the streams crossed by the Project.

Watercourse Restoration and Compensatory Mitigation

Upon completion of in-stream construction, Transco will restore the stream bed and banks to minimize erosion, washouts, and associated turbidity and sedimentation. Transco will stabilize the stream bed and banks to preconstruction contours such that they are similar to banks at the limits of disturbance. Transco will utilize pre-construction photographs. Banks will be stabilized using geotextile fabric. **Appendix L-3**, Table 1 identifies each watercourse and which stream restoration detail is to be utilized on either bank. A typical detail for streambed restoration is included in the BMPs and Quantities Plan Set within **Attachment M**. The streambed will be restored to grade using native streambed material. To further stabilize the surface water banks, Transco will revegetate the banks and riparian areas in accordance with the **Riparian Area Impact Assessment and Restoration Plan for Luzerne County** included in **Appendix L-2**. The temporary vegetation will stabilize

the area until indigenous riparian species are re-established. If inclement weather limits the effectiveness of reseeded efforts, temporary erosion control measures will be implemented to minimize erosion until conditions are suitable for reseeded. The temporary erosion control measures will be monitored and maintained until conditions are suitable for completion of restoration. No fertilizers, lime, or mulch will be utilized in riparian areas unless required in writing by PA DEP and USACE permit requirements and the FERC order.

Following construction, disturbed areas adjacent to watercourses and bodies of water will be reseeded with approved seed mixes in accordance with the **Riparian Area Impact Assessment and Restoration Plan for Luzerne County within Appendix L-2**. Trees and other woody vegetation will be allowed to reestablish naturally within the temporary ROWs and other temporary workspaces that were cleared for construction of the pipeline. The use of soil conservation techniques will avoid and/or minimize erosion and runoff that could potentially affect surface water quality.

No permanent fill will be placed in any watercourses as a result of this Project, and no stream relocation is expected. Therefore, no stream mitigation is proposed for this Project.

Floodplains

Marsh Run, Maple Run, Kitchen Creek, Crooked Creek, Phillips Creek, Lick Branch, Arnold Creek, Shingle Run, Mitchler Run, Harveys Creek, UNT to Huntington Creek, UNT to Pikes Creek, Paint Spring Run, and UNT to Harveys Creek have Federal Emergency Management Agency (FEMA) designated floodplains that are located within the construction workspace. PA DEP defines a regulatory floodway as a 50-foot buffer, which is established 50 feet from the delineated boundary of streams that do not have FEMA mapped 100-year floodplains (32 P.S. § 679.302 Chapter 106). Temporary impacts to floodways are expected from construction activities, but there will be no permanent loss of flood storage capacity as all pre-construction surface elevations will be re-established during restoration. Temporary floodway impacts will be **9.3079** ~~9.2920~~ acres. Of the total temporary impacts, 2.6428 will be to FEMA mapped floodplains. Permanent floodway impacts will be **0.7221** ~~0.6914~~ acre as a result of operation of the pipeline ROW. Of the total permanent impacts 0.1456 will be to FEMA mapped floodplains. These impacts are associated with vegetation management only and do not represent a permanent

modification of ground elevation or loss of flood storage capacity. Impact details are included in Table L(d)-7. As stated above, a **Riparian Area Impact Assessment and Restoration Plan for the Project area in Luzerne County is provided in Appendix L-2**. The Riparian Area Impact Assessment and Restoration Plan for Luzerne County includes measures for replanting and reestablishing the riparian buffer within the regulated floodplain (Federal Emergency Management Agency [FEMA] mapped 100-year floodplain or 50-foot-wide floodway if no FEMA-mapped floodplain is present, whichever is greater) (see **Appendix L-2**).

Table L(d)-7
 Floodplain Impacts Associated With the Atlantic Sunrise Project in Luzerne County

Resource ID	Resource Name	Floodway Type	Temporary Impact Dimensions ₄ (Length x Width)		Temporary Impact area ^d (Acres)	Permanent Impact Dimensions ₄ (Length x Width)		Permanent Impact area (Acres)	Latitude	Longitude
			(Feet) ^a	(Feet) ^a		(Feet) ^a	(Feet) ^a			
Floodway to WW-T02-15016	Floodway to Marsh Run	FEMA Detailed	108.98	51.63	0.0188	11.80	3.10	0.0004	41.28429	-76.31138
Floodway to WW-T02-15017	Floodway to Maple Run	FEMA Detailed ^b	1070.10	90.00	0.4061	981.39	5.00	0.0142	41.28609	-76.29438
Floodway to WW-T02-15018 ^c	Floodway to Kitchen Creek	FEMA Detailed	97.54	63.25	0.0219	6.50	5.00	0.0006	41.29065	-76.27004
Floodway to WW-T24-15001 ^c	Floodway to Crooked Creek	FEMA Detailed	96.30	72.49	0.0590 ^c	61.79	5.00	0.0056	41.29123	-76.26781
Floodway to WW-T02-16001	Floodway to UNT to Phillips Creek	Assumed 50 Feet	253.07	86.78	0.2795	151.46	5.00	0.0155	41.29778	-76.23757
Floodway to WW-T02-16002	Floodway to Phillips Creek	FEMA Detailed	116.77	110.67	0.1275	52.33	5.00	0.0057	41.29814	-76.23494
Floodway to WW-T05-16003	Floodway to Lick Branch	FEMA Detailed	294.31	59.84	0.1599	193.74	5.00	0.0187	41.30103	-76.21739
Floodway to WW-T11-16001A	Floodway to UNT to Arnold Creek	Assumed 50 Feet	174.47	20.84	0.0450	113.85	5.00	0.0096	41.30355	-76.20415
Floodway to WW-T11-16001	Floodway to Arnold Creek	FEMA Detailed ^b	309.31	97.09	0.3502	205.16	5.00	0.0223	41.30406	-76.19877
Floodway to WW-T11-16001C	Floodway to UNT to Arnold Creek	Assumed 50 Feet	165.60	31.89	0.0925	0.0000	0.0000	0.0000	41.30425	-76.19771
Floodway to WW-T13-16002	Floodway to UNT to Shingle Run	Assumed 50 Feet	194.82	95.93	0.2222	150.63	5.00	0.0128	41.30506	-76.18719
Floodway to WW-T13-16001	Floodway to Shingle Run	FEMA Detailed	101.37	66.86	0.0810	67.35	5.00	0.0060	41.30557	-76.18063
Floodway to WW-T05-16002	Floodway to UNT to Mitchler Run	Assumed 50 Feet	201.86	96.66	0.2430	157.03	5.00	0.0161	41.30680	-76.16629
Floodway to WW-T05-16001	Floodway to Mitchler Run	FEMA Detailed ^b	328.34	90.00	0.2737	175.11	5.00	0.0174	41.30724	-76.16320
Floodway to WW-T03-16003C	Floodway to UNT to Huntington Creek	FEMA Detailed ^b	316.32	34.38	0.0138	43.60	5.00	0.0027	41.31104	-76.14836
Floodway to WW-T03-16004	Floodway to UNT to Huntington Creek	Assumed 50 Feet ^b	228.52	73.31	0.1689	176.04	5.00	0.0099	41.31116	-76.14824
Floodway to WW-T03-16003A	Floodway to UNT to Huntington Creek	FEMA Detailed	8.51	0.71	0.0001	0.0000	0.0000	0.0000	41.31134	-76.14706
Floodway to WW-T03-16003 ^c	Floodway to UNT to Huntington Creek	FEMA Detailed ^b	564.07	138.94	0.8062 ^c	384.91	5.00	0.0360	41.31281	-76.13759
Floodway to WW-T03-16002	Floodway to UNT to Huntington Creek	Assumed 50 Feet ^b	922.99	90.00	0.8552	534.28	5.00	0.0400	41.31456	-76.12746
Floodway to WW-T03-16001	Floodway to Fades Creek	Assumed 50 Feet	236.69	90.00	0.2004	176.02	5.00	0.0135	41.31745	-76.11341
Floodway to WW-T03-17008	Floodway to UNT to Pikes Creek	FEMA Detailed ^b	204.47	90	0.1476	0.1476	5.00	0.0067	41.31990	-76.09825
Floodway to WW-T03-17007	Floodway to UNT to Pikes Creek	Assumed 50 Feet	218.43	94.75	0.1992	161.03	5.00	0.0140	41.32021	-76.09718

**Table L(d)-7
 Floodplain Impacts Associated With the Atlantic Sunrise Project in Luzerne County**

Resource ID	Resource Name	Floodway Type	Temporary Impact Dimensions ₄ (Length x Width)		Temporary Impact area ^d (Acres)	Permanent Impact Dimensions ₄ (Length x Width)		Permanent Impact area (Acres)	Latitude	Longitude
			(Feet) ^a	(Feet) ^a		(Feet) ^a	(Feet) ^a			
Floodway to WW-T03-17006	Floodway to UNT Paint Spring Run	Assumed 50 Feet	140.66	91.45	0.1958	127.65	5.00	0.0116	41.32298	-76.08764
Floodway to WW-T03-17005	Floodway to Paint Spring Run	FEMA Detailed	128.77	91.10	0.0788	112.57	5.00	0.0065	41.32433	-76.07999
Floodway to WW-T03-17004	Floodway to Harveys Creek	FEMA Detailed	386.66	90.00	0.0505	30.23	5.00	0.0028	41.32608	-76.07080
Floodway to WW-T03-17003	Floodway to UNT to Harveys Creek	Assumed 50 Feet	241.67	89.91	0.1788	195.73	5.00	0.0144	41.32748	-76.05808
Floodway to WW-T03-17001	Floodway to UNT to Harveys Creek	Assumed 50 Feet	147.03	102.78	0.1998	138.53	5.00	0.0121	41.32735	-76.04637
Floodway to WW-T03-17002	Floodway to UNT to Harveys Creek	Assumed 50 Feet ^b	494.42	98.23	0.3654	264.97	5.00	0.0220	41.32710	-76.03831
Floodway to WW-T49-17003	Floodway to UNT to Harveys Creek	FEMA Detailed	251.77	43.31	0.0147	1.59	1.46	<0.0001	41.32708	-76.03608
Floodway to WW-T33-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	392.44	68.15	0.4020	0.0000	0.0000	0.0000	41.32865	-76.01087
Floodway to WW-T93-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	104.29	83.54	0.0868	35.15	10.00	0.0073	41.33075	-76.01018
Floodway to WW-T93-16001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	25.08	13.51	0.0048	0.0000	0.0000	0.0000	41.33089	-76.00997
Floodway to WW-T07-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	106.54	9.43	0.0125	0.0000	0.0000	0.0000	41.33234	-76.00923
Floodway to WW-T49-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	118.38	95.33	0.1727	111.20	10.00	0.0231	41.33554	-76.00649
Floodway to WW-T51-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet ^b	202.54	76.73	0.1676	170.72	10.00	0.0288	41.33910	-76.00692
Floodway to WW-T52-17002	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	196.96	74.34	0.1368	172.90	10.00	0.0228	41.33953	-76.00719
Floodway to WW-T52-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	118.14	55.00	0.0501	5.15	3.10	0.0002	41.34037	-76.00746
Floodway to WW-T07-17002C	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	160.08	102.88	0.1905	125.69	10.00	0.0246	41.34237	-76.00552
Floodway to WW-T08-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	134.38	90.00	0.1815	123.41	10.00	0.0240	41.34550	-76.00674
Floodway to WW-T53-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet ^b	92.95	28.15	0.0337	0.00	0.00	0.0000	41.35061	-76.01040

**Table L(d)-7
 Floodplain Impacts Associated With the Atlantic Sunrise Project in Luzerne County**

Resource ID	Resource Name	Floodway Type	Temporary Impact Dimensions ₄ (Length x Width)		Temporary Impact area ^d (Acres)	Permanent Impact Dimensions ₄ (Length x Width)		Permanent Impact area (Acres)	Latitude	Longitude
			(Feet) ^a	(Feet) ^a		(Feet) ^a	(Feet) ^a			
Floodway to WW-T53-17002	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	122.91	114.86	0.1918	117.57	10.00	0.0236	41.35134	-76.01101
Floodway to WW-T53-17003	Floodway to UNT to Huntsville Creek	Assumed 50 Feet ^b	253.90	125.62	0.3459	190.50	44.91	0.0403	41.35166	-76.01121
Floodway to WW-T53-17004	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	111.21	94.12	0.1725	112.47	9.99	0.0238	41.35217	-76.01072
Floodway to WW-T90-17002	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	111.14	72.75	0.1187	109.76	9.98	0.0236	41.35265	-76.01005
Floodway to WW-T71-18001	Floodway to UNT to Leonard Creek	Assumed 50 Feet	144.91	39.00	0.0636	0.00	0.00	0.0000	41.36481	-75.99505
Floodway to WW-T07-17003	Floodway to UNT to Leonard Creek	Assumed 50 Feet	307.30	125.56	0.2352	140.15	10.00	0.0280	41.36493	-75.99447
Floodway to WW-T07-17004	Floodway to UNT to Leonard Creek	Assumed 50 Feet	241.79	110.69	0.2286	128.52	10.00	0.0246	41.36536	-75.99249
Floodway to WW-T65-18001	Floodway to UNT to Leonard Creek	Assumed 50 Feet	119.68	99.19	0.1967	109.17	10.00	0.0240	41.37890	-75.97773
Floodway to WW-T33-17005	Floodway to Paint Spring Run	FEMA Detailed	73.81	10.50	0.0159	0.00	0.00	0.0000	41.32450	-76.08008
Floodway to WW-T33-17001	Floodway to UNT to Huntsville Creek	Assumed 50 Feet	139.32 130.18	63.32	0.1170 0.1522	134.77	14.16	0.0310	41.32885	-76.01025
Floodway to WW-T24-18001	Floodway to UNT to Leonard Creek	FEMA Detailed	22.22	14.51	0.0035	0.00	0.00	0.0000	41.37692	-75.98197
Floodway to WW-T76-18009	Floodway to UNT to Leonard Creek	Assumed 50 feet ^b	326.04	109.69	0.2593	187.55	29.01	0.0353	41.38350	-75.98020
Floodway to WW-T76-18008	Floodway to UNT to Leonard Creek	FEMA Detailed	34.75	19.19	0.0136	0.00	0.00	0.0000	41.38403	-75.98220
Floodway to WW-T03-17005	Floodway to Paint Spring Run	FEMA Detailed	73.81	10.50	0.0159	0.00	0.00	0.0000	41.32450	-76.08008
Floodway Impacts					9.3079 9.2920			0.7221 0.6914		

a: Widths are reported as the maximum width for the feature. Stream lengths are reported on the impact maps as the sum of the permanent and temporary lengths.
 b: Multiple streams are included in these calculations as the floodways overlap.
 c: This feature will be crossed using an HDD within the LOD shown on the drawing. However, the impacts shown are for the contingency, or secondary, crossing method, since those impacts are larger. The drawing showing the LOD and resource impacts for the contingency crossing method is provided in Attachment H-3.
 d: See Attachment E-2 footnotes for a description of temporary impacts in the floodway associated with access roads.

B1a. Food Chain Production

Most of the watercourses crossed by the Atlantic Sunrise Project are minor and intermediate streams, which have food chains that are driven by detrital input from riparian vegetation, rather than phytoplankton. Therefore, temporary increases in sediment load will not have an adverse effect on the trophic structure of the streams. It is unlikely that temporary increases in turbidity will have an adverse effect on aquatic biota of the area, especially since many of these watercourses may already be turbid and/or are subjected to higher turbidity levels from precipitation-based run-off. As such, the existing in-stream communities are adapted to living in turbid conditions. Oxygen levels will begin to return to normal within hours of the completion of in-stream construction as the sediment settles. Effects will generally be limited to the short period of in-stream construction, and conditions are expected to return to normal following stream restoration activities. To minimize these effects, Transco will implement BMPs to control erosion and sediment run-off from workspaces.

In particular, the following measures specific to watercourse crossings will be implemented, as appropriate:

- Sediment barriers will be installed across the entire construction ROW at all watercourse crossings where necessary to prevent the flow of sediments into the watercourse. In the travel lane, these may consist of removable sediment barriers or drivable berms. Removable sediment barriers may be removed during the construction day, but will be re-installed after construction has stopped for the day or when heavy precipitation is imminent;
- Where watercourses are adjacent to the construction ROW, sediment barriers will be installed along the edge of the construction ROW as necessary to contain spoil and sediment within the construction ROW;
- Trench plugs will be used at all watercourse crossings as necessary to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the watercourse, unless otherwise approved by the on-site environmental inspector to allow natural flow of water into the watercourse; and
- Applicable watercourse setbacks will be maintained until construction-related ground-disturbing activities are complete. The setback distances vary based on the type of activity being performed, but all will be clearly marked in the field with signs and/or highly visible flagging prior to pipeline construction.

B1b. General Habitat (including Nesting, Spawning, Rearing, Resting, Migration, Feeding, and Escape Cover)

Within the Atlantic Sunrise Project area throughout Pennsylvania, general temporary construction-related impacts on wildlife species will be related to habitat disturbance and human activities, while permanent impacts are those associated with the conversion of forest habitats to open or scrub-shrub areas because of construction and maintenance of the permanent ROW. Indirect impacts on wildlife include those associated with increased human activity. Construction of the Project likely will result in the temporary displacement of or stress on animals in areas adjacent to construction and cause movement of some wildlife away from the Project area. Stress on wildlife could affect general health, reproduction, and viability of young, depending on the sensitivity of a particular species, season of the year, and other factors. Other temporary impacts on wildlife species include those from pipeline trenching activities and associated spoil piles, which could result in a short-term barrier to movement to some species. During clearing and grading activities, more mobile wildlife species (e.g., larger mammals, birds, and reptiles) will be able to avoid the construction area, and many are expected to leave the area during construction. Construction activity will be temporary and will stay in a given area for only a few weeks, at most. Habitat recovery will occur to the maximum extent possible, aided by the use of the impact minimization and restoration measures outlined in the ECP (**Attachment M**).

Direct and long-term impacts on wildlife habitat resulting from construction and operation of the proposed Project will include the clearing of uplands, wetlands, and riparian areas required for temporary workspace and new permanent easement. Where feasible, Transco has routed the pipeline to follow existing corridors (and thus follow existing forest edges). The direct removal of vegetation has the potential to reduce the amount of available habitat, food resources, and cover. An important effect of vegetation removal is habitat fragmentation. Habitat fragmentation occurs as larger areas of habitat are reduced and/or split into smaller non-contiguous areas by development. Besides the direct loss of habitat, habitat fragmentation can also cause change in habitat vegetation composition (which could include the introduction of noxious and/or invasive species). It is not anticipated that wildlife populations that utilize the Project area will be permanently adversely affected by the proposed Project. While temporary impacts on food, cover, and water sources may occur, none of the species located within the Project area are

specialized in such a way that construction of the Project will inhibit the overall fitness or reproductive output of the populations as a whole.

Temporary habitat alteration at the crossing location, and increased suspended solids concentrations and sedimentation downstream from the crossing may temporarily degrade fish spawning and nursery areas, resulting in a temporary reduction in reproductive potential. Transco expects these effects to be temporary in nature because the suspended sediments will be flushed by the existing currents or settle out, and aquatic communities will subsequently recolonize the affected area.

Permanent impacts to spawning, however, are not anticipated as a result of this Project. Impacts to spawning should be mitigated by timing construction outside of the restricted period for activities within Wild Trout and Class A Wild Trout streams. Transco has coordinated with the PFBC to confirm the time of year restrictions that are applicable to the streams crossed by the Project.

B1c. Habitat for Threatened and Endangered Plant and Animal Species

Transco has consulted with the PA DCNR, PGC, PFBC, and United States Fish and Wildlife Service (USFWS) regarding federal and state-listed threatened and endangered species in the Project area. A summary of this correspondence is included in **Attachment G** of this permit application package.

B1d. Environmental Study Areas

The Project will not affect any locations in which environmental studies are known to be taking place.

B1d1. Sanctuaries

The Project will not affect sanctuaries in Luzerne County.

B1d2. Refuges

The Project will not affect refuges in Luzerne County.

B2. Water Quantity and Streamflow

B2a. Natural Drainage Patterns

It is anticipated that the Project will not impact natural drainage patterns. The stormwater management controls included in the Project (discussed in **Attachment M**, ECP) have been designed to maintain natural or current drainage characteristics, as appropriate.

B2b. Flushing Characteristics

It is not anticipated that the Project will impact flushing characteristics.

B2c. Current Patterns

The Project may have minor, localized temporary effects on current patterns in the immediate vicinity of the proposed stream crossings during construction but will be minimized where possible through the appropriate implementation of BMPs based upon calculations completed in accordance with PA DEP Chapter 102. Permanent impacts to current patterns are not anticipated as all disturbed areas will be restored to pre-construction conditions.

B2d and e. Groundwater Discharge for Baseflow and Natural Recharge Area for Ground and Surface Waters

The Project is not expected to impact any potable water intakes or public water supplies which rely on groundwater recharge. Transco identified potable and non-potable surface water intake structures in proximity to the Project using eMapPA. Across the Project, nineteen surface water intakes were identified less than 3 miles downstream of Project watercourse crossings using eMapPA. Of the 19 surface water intakes identified, the primary uses were identified as agriculture (12), commercial (1), industrial (2), mineral (1), and oil/gas (3). Based on their primary uses, it is unlikely that the 18 non-commercial surface water intakes are used for potable water. Transco verified that these 18 intakes are not listed in Pennsylvania's Drinking Water Reporting System, indicating these intakes are not public water supplies and are, therefore, not used as community potable water sources. The single commercial surface water intake is located in Wyoming County.

Additionally, Transco requested information from the PA DEP Northeastern Regional Office regarding surface water intakes. The PA DEP Northeastern Region's response did not identify

additional public water supplies within the vicinity of the Project and did not identify public water supplies with Zone A Source Water Protection Areas crossed by the Project (Ostir 2014).

Transco has determined the Project will not impact public water supplies within Luzerne County due to the absence of public water supply intakes near the Project. Transco will additionally mitigate the potential for impacts to distal public water supplies through use of dry-ditch crossing methods and implementation of all erosion and sediment control plans as specified in the Transco Procedures (ECP Attachment 18, included in **Attachment M** of this Application).

During construction, Transco will adhere to all measures in the Transco Procedures, which will minimize sedimentation and turbidity, minimize streambed and bank disturbance, and limit the time it takes to complete in-stream construction. To minimize sedimentation during pipeline construction across each watercourse, trench spoil will be placed at least 10 feet away from water's edge, unless impractical due to topography. Erosion controls will be placed around spoil piles to prevent sediment from flowing into watercourses.

Potential impacts will be further avoided by implementing Transco's Spill Plan (ECP Attachment 9, included in **Attachment M** of this Application) in the event of a spill. Transco will follow the spill prevention practices enumerated in the Spill Plan, which include proper container and tank storage and inspection instructions, loading/unloading procedures, and spill response kit specifications. As stated in the Spill Plan, Transco will maintain and immediately respond to spills as appropriate to the situation, with responses ranging from the use of absorbent pads to the employment of an emergency spill response contractor. In addition, refueling and transferring of liquids will occur only in pre-designated locations that are on level ground and at least 100 feet from any wetland or waterway, thereby preventing contamination of watercourses.

B2f. Storm and Flood Water Storage and Control

It is not anticipated that the Project will adversely impact storm and flood water storage and control. Transco has developed a Post Construction Stormwater Management Plan in accordance with PA DEP Chapter 102 to prevent impacts to stormwater discharges and control. There will be no loss of flood storage capacity within designated floodways as pre-construction surface contours will be restored.

B3. Water Quality

B3a. Preventing Pollution

Construction activities can disturb surface soils and cause subsequent sediment transport into adjacent wetlands. Sedimentation will be minimized by the installation of temporary sediment control measures between the upland construction areas and the wetlands. Permanent erosion controls, including slope breakers, trench breakers, and vegetative cover, will be used in adjacent upland areas to minimize long-term sedimentation into the wetlands. Energy dissipation devices may be installed at the down-slope end of slope breakers to minimize erosion of soil off the ROW into wetlands. Trench plugs will be installed in upland slopes adjacent to wetlands to prevent trench erosion and siltation

To minimize erosion and promote revegetation within the wetland, removal of the root mats for woody vegetation will be allowed only directly over the trench area or where required to ensure safe working conditions. This serves to enhance regeneration of vegetation on the construction and permanent ROW. Permanent erosion control structures that could alter hydrology (e.g., slope breakers) will not be installed within wetlands, but these structures will be used in the adjacent upland areas to control erosion and sedimentation. Transco will employ BMPs as specified in erosion and sediment control permits and approved by PA DEP to further minimize the potential for soil compaction.

Turbidity and sedimentation could result from in-stream construction activities, trench dewatering, and/or construction-related stormwater runoff. In slow-moving waters, increases in suspended sediments could increase the biological oxygen demand and reduce levels of dissolved oxygen in localized areas during construction. Suspended sediments also could alter the chemical and physical characteristics of the water column on a temporary basis.

Transco will cross surface waters with flowing water present at the time of construction using dry-ditch construction methods to the greatest extent practicable. Dry-ditch crossing methods can dramatically reduce downstream sediment transport effects compared to wet open-cut crossings. Transco will employ BMPs as specified in Transco's Erosion and Sediment Control General Permit 2 (ESCGP-2) application, which contains site-specific erosion and sediment control plan to further minimize the potential for soil compaction.

Transco will also install temporary equipment bridges across surface waters to reduce the potential for turbidity caused by movement of construction equipment and vehicular traffic. Equipment bridges will be constructed of timber mats or portable prefabricated bridges, depending on surface water conditions (e.g., if excessively soft soils are encountered in the surface water bed, or if high water flows occur, portable bridges will be used at minor surface water crossings). Typical drawings for equipment bridges are provided in Attachment 2 of the Transco ECP (**Attachment M**). Equipment bridges will be maintained until the pipe is installed and they are no longer needed. The bridges will then be removed. Equipment bridges will be designed to accommodate normal to high surface water flow and will be maintained to prevent flow restriction during the period of time the bridge is in use during construction.

To minimize sedimentation during pipeline construction across each watercourse, trench spoil will be placed at least 10 feet away from water's edge, unless impractical due to topography, as specified in the Transco Procedures (Attachment 18 of the Transco ECP (**Attachment M**)). Erosion controls will be placed around spoil piles to prevent sediment from flowing into surface waters. ATWS will typically be set back 50 feet from the water's edge unless otherwise approved by applicable regulatory agencies.

Once the pipe is placed in the trench, the excavated material will be replaced immediately, and the surface water banks and bed will be restored to preconstruction contours. To stabilize the banks, the surface water banks and riparian areas will be revegetated using approved seed mixes and/or erosion control blankets or matting in accordance with the **Riparian Area Impact Assessment and Restoration Plan for Luzerne County within Appendix L-2**.

B3b. Sedimentation Control and Patterns

The Project ECP and associated plans describe techniques that will be used to minimize erosion and release of sediments during and following Project construction. The ECP is included as **Attachment M**.

Post-construction stormwater management measures will also be implemented for water quality in areas where it is required. For the pipeline portion of the Project, no new impervious surfaces are proposed. The Post Construction Stormwater Management Plan is designed to

manage stormwater runoff associated with new impervious areas (gravel) for the proposed aboveground facilities. With the implementation of the E&S Pollution Control Plan and the stormwater management measures, water quality impacts are not anticipated.

B3c. Salinity Distribution

This section is not applicable to the proposed Project in **Luzerne County**.

B3d. Natural Water Filtration

Watercourses and wetlands in the Project area have some function in water filtration; however, impacts to these features will be temporary and natural water filtration capabilities will be restored.

B4. Recreation

B4a and b. Game and Non-Game Species

Within the Atlantic Sunrise Project area throughout Pennsylvania, construction of the pipeline facilities will negatively affect wildlife and wildlife habitat short-term within the immediate vicinity of open land along the pipeline route, which predominantly consists of existing ROWs. Effects will include disturbance due to clearing and trench excavation. This will affect less mobile species, including those that hide within burrows along the route, to a greater degree than those that can quickly flee the Project area. Following construction activities, the existing ROWs will be restored to preconstruction conditions to the extent practicable, and it is expected that wildlife will quickly return to the vicinity of the ROWs, using them as corridors for travel, refuge, foraging, and nesting. Following construction, these ROWs will be maintained in a manner similar to current conditions.

Some wildlife species that rely on forested habitat may be negatively affected by the temporary loss of forest. Removal of vegetation within forested land could cause long-term displacement of some local wildlife populations. However, any such impacts, while adverse, are expected to be highly localized and unlikely to have any population-level impacts based on the presence of suitable adjacent habitat for use. In addition, other wildlife species that prefer open land and scrub-shrub habitat will benefit from the temporary habitat conversion. As referenced in **Attachment L**, Enclosure C, Section A2a through A2g, Transco is developing a Memorandum

of Agreement (MOA) with the USFWS addressing conservation measures for migratory birds in the Project area. The MOA includes compensatory mitigation for removal of upland forest and forest fragmentation.

Transco does not expect significant direct mortality of wildlife to occur as a result of construction activities. Transco anticipates that the majority of wildlife will disperse from the vicinity of construction activities in response to disturbance from construction vehicles and equipment. Construction vehicles will adhere to low speed limits along all access roads to avoid wildlife mortality.

Following construction, the temporary workspaces outside the aboveground facility fence lines will be maintained in a manner similar to preconstruction conditions. Therefore, effects on wildlife in agricultural lands and open lands that are within temporary workspaces for aboveground facilities will be temporary, and these habitats are expected to recover within weeks to months following construction.

B4c. Fishing

Temporary impacts to streams during construction activities may temporarily affect fishing opportunities; however, no permanent impacts are anticipated within **Luzerne County**.

B4d and e. Hiking and Observation (wildlife)

Impacts to hiking or observation are discussed in Section A1 of this Attachment.

B4f. Other

Transco has initiated coordination with PFBC regarding the need to prepare site-specific Aids to Navigation (ATON) plans for each of the crossings which have been identified by PFBC as being recreationally navigable. Within the Project limits of Luzerne County, these include: Huntington Creek and Harveys Creek. Transco has prepared and submitted ATON plans in accordance with PFBC guidelines including the use of buoys, signage, and portage, as necessary. Transco submitted the ATON plans to PFBC on October 4, 2016, which were subsequently approved by the PFBC on January 20, 2017. A copy of the ATON applications and PFBC approval is included within **Appendix L-6. Transco is currently coordinating with the PFBC on the new crossings associated with the recent Management of Changes that are**

included within this revised application. The list of new stream crossings was submitted to the PFBC on April 26, 2017 for their review and determination of additional ATONs. Should additional ATONs be required for the revised Project footprint, Transco will provide the revised ATON application(s) and PFBC approval upon receipt. **The list of new streams provided to PFBC included one stream crossing in Luzerne County. Transco will implement the approved plans during construction to minimize impacts to recreational boaters within the Project area.**

B5. Upstream and Downstream Property

The implementation of the Project-specific ECP will minimize the impacts to properties upstream and downstream of the Project. The ECP is included in Section M.

B6. Other Environmental Factors

Selection of the proposed pipeline route was partially based on landowner preference, as well as avoidance of environmental impacts to resources such as watercourses and wetlands. The route minimized impacts to these features as much as possible and still fulfills the purpose and needs of the Project. Specific routing criteria is discussed in the Alternatives Analysis (**Attachment P-1**).

C. Environmental Impacts on Other Adjacent Land and Water Resources

Construction impacts to adjacent properties and water resources will be minimized through the use of the Project-specific ECP. This plan will conform to federal, state, and local regulations and prevent movement of sediment off the construction site. Stormwater generated on-site during construction will also be managed and released in a manner that conforms to applicable federal, state, and local regulations.

D. Cumulative Environmental Impacts

Cumulative effects may result when the environmental effects associated with construction and operation of a proposed Project are added to the environmental effects of other Projects or activities occurring in the same area. The United States Environmental Protection Agency (USEPA) guidelines state:

“Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. It is the combination of these effects, and any resulting

environmental degradation, that should be the focus of cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time.” (USEPA 1999).

To identify and assess potential cumulative effects of the Project, Transco is considering other past, present, and reasonably foreseeable Projects and other human-related activities near the Project facilities. The Comprehensive Environmental Evaluation for the Central Penn Line provided in **Appendix L-1** includes a summary of cumulative impacts for the Project as whole.

The existing conditions in the Project area reflect changes from past and present activities. Although much of the area is rural and relatively undeveloped, substantial alterations to the natural environment have occurred due to agriculture, mining, transportation Projects, and other development. The potential for cumulative effects from the Project exists for the following resources: groundwater, consumptive water use, surface water, vegetation, wildlife (federally and state-protected species of flora and fauna), cultural resources, socioeconomics, geology, soils, land use, air quality, and noise.

Transco has identified past, present, and reasonably foreseeable Projects and other human-related activities occurring in the vicinity of the Project (within 10 miles) that may result in cumulative effects when combined with the effects of the Project. Transco consulted with the affected municipal and county planning agencies to identify Projects in the vicinity of the Project. Transco also identified other activities, such as residential Projects located within a 0.5-mile radius of the Project, as well as transportation and energy development Projects located within a 10-mile radius of the Project.

The assessment of cumulative effects assumes that Project effects are minimized by the successful implementation of the environmental protection and mitigation measures described in the Transco ECP and compliance with applicable standard practices and federal, state, and local regulations and permit requirements.

The assessment area for potential cumulative effects includes the area directly affected by construction of the Project facilities in addition to the anticipated area of effect the Project may have on each resource. This assessment area varies for each resource, based on the potential for effects to extend beyond the area of direct effect. For example, effects on air quality have the potential to extend beyond the Project boundaries, but effects on geologic and soil resources would likely not extend beyond the construction boundaries. Cumulative effects are considered in the context of the appropriate geographic area of potential effect (e.g., watershed boundaries for water quality and use, and county boundaries for socioeconomics).

Water Use and Quality

This section addresses past, present, and reasonably foreseeable actions that, when taken into consideration with the Project, could result in cumulative effects on water quality and use. Potentially affected water resources include groundwater, surface water crossings, groundwater and surface water withdrawals, watercourses, and wetlands. The geographic area considered in the evaluation includes the watershed basin within the Project effect area. Potential cumulative effects resulting from construction activities and operations and maintenance have been considered as part of this analysis.

This analysis considered effects from other Projects within the same watershed (8-digit Hydrologic Unit Code [HUC]) and within 10 miles of the Project activities. The Project pipeline facilities cross two major watershed subregions (i.e., 4-digit HUCs) as defined by the United States Geological Survey (USGS) (USGS 2013b): the Susquehanna River subregion in Pennsylvania and the Potomac River subregion in Virginia. The Project pipeline facilities cross four major watershed basins (i.e., 6- digit HUCs): the Upper Susquehanna, the Lower Susquehanna, and the West Branch Susquehanna in Pennsylvania, and the Potomac in Virginia. The Project pipeline facilities cross eight watershed subbasins (i.e., 8-digit HUCs): the Upper Susquehanna-Lackawanna, the Upper Susquehanna-Tunkhannock, the Lower Susquehanna, the Lower Susquehanna- Swatara, the Lower Susquehanna-Penns, the Middle West Branch Susquehanna, and the Lower West Branch Susquehanna in Pennsylvania, and the Middle Potomac-Anacostia- Occoquan in Virginia.

Shallow (perched) aquifers could sustain effects from temporary changes in overland water flow and recharge caused by clearing and grading of the ROWs and temporary workspaces. In

forested areas, water infiltration, which is normally enhanced by vegetation, will be reduced until vegetation is reestablished. In areas where groundwater is encountered within the open trench, dewatering may result in a minor, temporary fluctuation in local groundwater levels. On occasion, blasting can cause adverse effects on groundwater flow and potentially reduce or eliminate the amount of groundwater supplied to nearby wells and/or springs.

To minimize potential effects associated with construction, Transco will implement mitigation measures during construction, including those described in the Transco Plan and the Transco Procedures, state-guidelines, and public and private well monitoring pre- and post-construction upon landowner request. For instance, waterbars will direct stormwater runoff from the construction ROW to well-vegetated areas or in accordance with state BMPs. Transco will also use sediment control measures such as filter bags, silt fences, and dewatering structures during dewatering and hydrostatic test water discharge activities. Where blasting is required, Transco will develop a site-specific blasting plan in addition to the general Blasting Plan provided in Attachment 10 of the Transco ECP (**Attachment M**) prior to blasting activities, and will conduct full-scale blast tests where recommended by Transco's Project Engineer. If any wells are affected by construction activities, Transco will repair them and/or compensate landowners for Project-related damage to wells.

Implementation of the comprehensive BMPs presented in Attachment 2 of the Transco ECP (**Attachment M**) will ensure the Project-related effects on groundwater are temporary and occur within or very near the construction ROW. Based on Transco's review, none of the Projects identified will overlap the construction ROW during the time of the Project's influence on groundwater. Therefore, the Project will not cause a significant measurable cumulative effect on groundwater resources when considered in addition to other past, present, and reasonably foreseeable actions.

Surface water resources may be affected during various stages of construction. Clearing and grading of stream banks, in-stream trenching, trench dewatering, and backfilling, could result in temporary modification of aquatic habitat, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants from sediments, thermal effects, modification of riparian areas, and introduction of chemical contaminants such as fuel and lubricants.

The Project facilities cross or are located within two major watershed sub-regions as defined by the USGS (USGS 2013b). Transco will use watercourse crossing methods based on site-specific conditions and resource sensitivity, which include dry-ditch, trenchless, and open-cut. Transco has routed the proposed pipeline facilities to avoid and minimize effects on watercourses and bodies of water to the greatest extent practicable while maintaining engineering standards and safety. Transco completed field routing surveys within a 600-foot-wide study corridor to identify a preferred alignment that, among other factors, avoided and minimized watercourse effects. Environmental criteria used during the routing surveys specific to watercourses included: (1) crossing watercourses at 90 degree angles to minimize in-stream disturbance whenever practicable; and (2) avoiding or minimizing crossings of major watercourses and bodies of water). Construction of the Project across watercourses may result in temporary adverse effects as a result of in-stream construction activities or construction on slopes adjacent to stream channels. Clearing and grading of stream banks, blasting, in-stream trenching, trench dewatering, and backfilling could result in temporary modification of aquatic habitat, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants from sediments, thermal effects, modification of riparian areas, and introduction of chemical contaminants such as fuel and lubricants.

Transco developed the ECP (**Attachment M**), including the Transco Procedures (Attachment 18 of the Transco ECP), in part to address temporary watercourse effects associated with construction of the Project. The Transco ECP is intended to satisfy the watercourse restoration requirements of resource protection agencies with applicable federal jurisdiction over areas affected by the Project. Construction activities at stream crossings will also comply with any additional measures detailed in applicable federal stream crossing permits.

Drilling for natural gas reserves in Pennsylvania is currently underway in several of the counties affected by the Project. Effects from drilling activities are associated with well pad development and improvement of existing dirt and paved roads. Similarly, several gathering line and natural gas well interconnect pipeline construction Projects were recently completed or are ongoing within the same watersheds crossed by the Project in Pennsylvania. Information on the exact locations and construction schedules for these Projects was not readily available; however, based on the general location of these Projects and the ongoing nature of their development,

the potential exists for cumulative effects on surface waters affected within the same watersheds crossed by the Project.

Implementation of the Transco Procedures will limit the effects of crossings in duration and distance and limit the effect of construction activities to the stream being crossed. None of the other activities identified during the cumulative effect analysis will also affect the same watercourses in the same timeframe as the Project; therefore Transco believes there will be no significant measurable cumulative effects on these resources.

To conduct the hydrostatic testing for the Project facilities, Transco will obtain applicable regulatory approvals for water withdrawals, which will be based on regulatory withdrawal rates, volumes, and passby flow restrictions, prior to commencing surface water withdrawals. Up to 61 million gallons of water is anticipated to be withdrawn from surface watercourses within the Project area for use in hydrostatic testing. **No water withdrawal sites are anticipated in Luzerne County.** Transco will use withdrawal methods that will not reduce water flow to a point that will substantially affect base flow conditions, fish habitat and other aquatic wildlife or recreational uses. Transco will coordinate with local and state agencies, as necessary, to conduct water withdrawals in a manner that will not reduce water availability to a point that will affect public usage. Transco does not anticipate any significant water quality effects resulting from discharge of hydrostatic test water. New pipeline facilities will consist of new steel pipe, coated internally, that will be free of chemicals and lubricant, and Transco does not propose to use antifreeze or any chemical additives for drying or other purposes. Transco will consult with the PA DEP and the Susquehanna River Basin Commission regarding hydrostatic test water withdrawal and discharge permits within the jurisdictional areas of each agency. Transco will continue to update FERC on the progress of agency consultation and permit applications.

HDDs will require the use of water during operation of the drill to cool the drill head, seal the walls of the hole, and process returns. For specific watercourse crossings, where feasible and approved by the applicable regulatory agencies, Transco will draw the required water from the watercourse that is being crossed via HDD. Withdrawal locations will be selected to minimize effects on watercourses in a similar manner as described above. **As stated previously, no water withdrawal sites are anticipated in Luzerne County.** Where drawing water from the watercourse is unavailable, Transco will obtain water from an approved off-site source.

The state water withdrawal permitting processes ensure that concurrent Projects involving water withdrawals from the river basins crossed by the Project do not exceed acceptable levels or result in significant cumulative effects. Based on the temporary, localized effect of drawdown due to the relatively small quantities of water required for the Project, Transco expects that the hydrostatic testing and construction dewatering activities planned for the Project will not contribute to measurable cumulative effects on these water resources.

There will be no permanent loss of wetland area from construction of the Project. The Project will have temporary effects on PEM and PSS wetlands and result in permanent conversion of PFO wetlands to PSS or PEM wetlands in proposed new permanent pipeline ROW. Transco is proposing compensatory off-site mitigation for Project-related impacts to PFO wetlands for temporal conversion of PFO wetlands within the temporary construction easement and permanent conversion of PFO wetlands to PEM wetlands within a 15-foot wide operation and maintenance corridor on either side of the pipeline centerline within the permanent easement. Off-site mitigation will also provide compensation for temporal conversion of PSS wetlands to PEM wetlands within a 10-foot wide operation and maintenance corridor centered over the pipeline within the permanent easement.

Transco has routed the proposed pipeline facilities and associated workspaces to avoid and minimize effects on wetlands while maintaining engineering standards and safety. Transco completed field routing surveys within a 600-foot wide-corridor to identify proposed pipeline alignments that, among other factors, avoided or minimized wetland effects to the extent practicable. Environmental criteria used during the routing surveys specific to wetlands included: (1) minimizing effects at wetland crossings to the maximum extent practicable; and (2) avoiding or minimizing effects on forested wetlands.

Transco will implement the measures in its Procedures to minimize effects on wetlands from Project activities during the construction, post-construction restoration, and operation phases of the Project. In addition, the Project construction activities at wetland crossings will be performed in accordance with applicable federal regulatory requirements, such as the use of specialized construction techniques designed to minimize effects and reduce workspace area. Implementing these measures will help to limit adverse effects on wetlands from the Project to

the construction ROW in each wetland. The Transco Procedures will result in no net loss of wetlands, although there will be some conversion of wetland value and type.

Based on the above analysis, Transco believes there will be no significant measurable cumulative effects from the Project on wetlands.

Fish, Vegetation and Wildlife

This section addresses past, present, and reasonably foreseeable actions that, when taken into consideration with the Project, could result in cumulative effects on fish, vegetation and wildlife. The geographic area considered in the evaluation of potential vegetation effects included the ecosystem within 0.5 mile of the Project effect area.

The majority of effects associated with Project pipeline construction will be temporary disturbances associated primarily with clearing the construction workspace of vegetation. Temporary effects will either be short-term, where restoration to preconstruction conditions will be completed following construction, or long-term, where restoration to preconstruction conditions will take place over several growing seasons and may result in a permanent change in the vegetation structure. Long-term, temporary disturbances will be associated primarily with areas where forested land is cleared within temporary workspaces. Construction of the new aboveground facilities and expansion of some existing facilities will result in the permanent loss of vegetation communities that are cleared and replaced with impervious surfaces or converted from upland forest to open land. A summary of the temporary and permanent land that will be disturbed by the Project is provided as **Attachment J**.

Following construction, temporary workspaces on open land and agricultural land will be restored according to the Transco Plan (**Attachment M**). During operation, Transco will maintain additional 50-foot-wide permanent ROWs along CPL North In accordance with the Transco Plan, maintenance will include mowing the permanent ROW no more than once every 3 years. However, a 10-foot-wide corridor centered over the pipeline will be maintained annually in an herbaceous state that facilitates visual inspections. This maintenance will result in permanent conversion of existing upland and wetland forested areas to herbaceous or scrub-shrub vegetation communities.

Transco will implement specific measures to reduce these effects, including: (1) minimizing the footprint of the proposed work activities and the duration of disturbances to the extent practicable, (2) protecting topsoil in agricultural areas and mitigating subsoil compaction, (3) adhering to the Noxious and Invasive Species Management Plan (Attachment 11 of the Transco ECP (**Attachment M**)), (4) co-locating with existing ROWs to the extent practicable, (5) installing erosion controls to prevent the loss of soils and reseeded to stabilize the soils and speed revegetation, and (6) monitoring the success of revegetation efforts and taking appropriate action to address areas that have not been fully revegetated with native seed mix.

The development Projects identified during the cumulative effects analysis are relatively small and in various stages of planning and completion. Therefore, Transco believes there will be no significant measurable cumulative effects on vegetation.

Also reviewed were past, present, and reasonably foreseeable actions that, when taken into consideration with the Project, could result in cumulative effects on wildlife, including threatened and endangered species and fisheries. The geographic area considered in the evaluation includes vegetative habitats that are used by wildlife (breeding grounds, migratory routes, range, etc.) within the Project area. These include forested areas, herbaceous habitats, wetlands, and other similar vegetative habitats used by wildlife and protected species. Potential cumulative effects resulting from construction activities and operation and maintenance have been considered as part of this analysis.

Construction of the Project facilities has the potential to negatively affect wildlife and wildlife habitat within the immediate vicinity of the pipeline route and locations of the aboveground facilities. Effects may include disturbance due to clearing and trench excavation. Transco does not expect significant direct mortality of wildlife to occur as a result of construction activities. Transco anticipates that the majority of wildlife will disperse from the vicinity of construction activities in response to disturbance from construction vehicles and equipment, but limited mortality of slow-moving or sessile organisms could occur within the footprint of the aboveground facilities, partly as a result of construction vehicle traffic. Noise and ground disturbance generated by pipeline construction activities may temporarily affect wildlife behavior in the immediate vicinity of the facilities.

Following construction activities, the existing ROWs will be restored to preconstruction conditions to the extent practicable, and it is expected that wildlife will quickly return to the vicinity of the ROWs, using them as corridors for travel, refuge, foraging, and nesting. Following construction, these ROWs will be maintained in a manner similar to current conditions. Transco will also restore temporary workspaces outside agricultural areas using an herbaceous seed mix that will minimize competition with native woody plant species while offering additional wildlife habitat and food sources, or another type of seed mix agreed upon with the applicable agencies and the landowner. Habitat fragmentation and conversion of forested lands will occur as a result of this Project and the other Projects that involve clearing of forested land during construction and/or operation. However, Transco has sought to avoid and minimize forest clearing, to the extent practicable, through co-location with other utility corridors and long-term maintenance of ROW widths in forested wetlands. Restoration of vegetation in Project construction areas will be ensured by adherence to the Transco Plan and Procedures (Attachments 17 and 18 of the Transco ECP (**Attachment M**)), and other applicable federal permit conditions. Other than the occasional presence of vehicles during inspections and maintenance, Transco does not anticipate any other disturbance to wildlife along the pipeline ROWs during operation. Similarly, operation of the aboveground facilities is not expected to adversely affect wildlife populations.

Because the pipeline ROW will be revegetated and useable by wildlife following construction, and important habitats have been avoided to the greatest extent practicable, long-term effects on wildlife habitats will be minimized and avoided. Transco expects that similar restoration activities would be employed for the Projects identified in the cumulative effects analysis as well, along with the implementation of BMPs and other effect avoidance measures. Based on this, Transco believes there will be no significant measurable cumulative effects of the Project on wildlife.

Transco completed surveys for threatened and endangered species through the Project area and developed suitable avoidance, minimization, and mitigation measures to prevent adverse effects. Transco believes that through these agency consultations cumulative effects have been appropriately addressed.

Transco consulted with the PFBC to identify both game and non-game fishery species and determine fishery classifications for watercourses crossed by the proposed pipeline. Due to the

Project route and location and the presence of downstream dams, Transco determined that consultation with NOAA Fisheries was not necessary for the Project.

Construction of the Project may include temporary effects on watercourses and associated fisheries crossed by the Project. Temporary effects on fisheries include disturbance of watercourse banks, removal of bank vegetation, and in some instances, modification of flow during dry-crossing construction. Transco will minimize effects resulting from construction through adherence to the Transco Procedures in the ECP (**Attachment M**). Transco is also consulting with the PFBC on these and other fishery effect minimization and mitigation measures. No watercourses or fishery resources will be affected by construction of new and modified existing aboveground facilities. Transco does not anticipate that the operation and maintenance of the pipeline or aboveground facilities will have adverse effects on fishery resources.

The Project effect on fisheries will be similar to that described for surface waters. Implementation of the Transco Procedures will limit the effects of crossings in duration and distance and limit the effect of construction activities to the stream, and fishery, being crossed. None of the other activities identified in the cumulative effects analysis will also affect the same streams or fisheries within the same timeframe as the Project; therefore, there is no potential for cumulative effect on these fisheries.

Cultural Resources

Transco has consulted with the PHMC and applicable Tribal Historic Preservation Offices regarding potential effects on cultural resources resulting from the Project. Beginning in May 2014, Transco commenced with Phase I cultural resources surveys in Pennsylvania, and continued surveys into 2016 in Pennsylvania. Transco completed surveys for cultural resources through the majority of the Project area and developed suitable avoidance, minimization, and mitigation measures to prevent adverse effects (see **Attachment D-1 and D-2**). Use of avoidance and mitigation measures would be expected to prevent adverse effects. Transco believes that through these agency consultations cumulative effects have been appropriately addressed.

Land Use, Recreation and Aesthetics

The geographic area considered in the evaluation of land use includes the community, metropolitan area, county, state, or region within the Project effect area. For recreation, the geographic area considered in this analysis includes rivers, lakes, geographic areas, or land management units within the Project effect area. For visual resources, the geographic area would be the viewshed within 0.5 mile of the Project study area. Potential cumulative effects resulting from construction activities and operations and maintenance have been considered as part of this analysis.

The primary pipeline-related effects on existing land uses for the Project will be associated with vegetation clearing during construction. Agricultural lands crossed by the Project include large tracts of row and field crops such as corn, soybeans, wheat, and hay. No commercial silviculture (i.e., timber production) operations have been identified along the pipeline route. A majority of the commercial and industrial land crossed by the Project is not currently in use and is located within contractor/pipe yards. Open land (e.g., nonforested and undeveloped land not classified for another use, including land maintained as utility ROWs) is also crossed by the Project.

Transco will allow forested areas affected within the temporary construction ROWs and other temporary workspaces to revert to forest through natural successional processes after construction. Within the permanent ROW, Transco will maintain currently forested upland areas in an herbaceous vegetation state to facilitate inspection and operation of the Project facilities.

Transco will acquire road and railroad crossing permits from the appropriate state or local jurisdiction, as required by state and/or local road encroachment permits and regulations. By complying with these permits, Transco will not permanently affect any roads or railroads. Transco proposes to construct its pipeline facilities within or adjacent to existing utility corridors where practicable. Where co-located with existing corridors, Transco will seek to overlap the construction ROWs with existing utility ROWs to minimize new disturbance.

Transco identified public land, conservation land, recreational areas, and other designated or special use areas in the vicinity of the Project and obtained additional information for these areas by consulting with federal, state, county, and local agencies and private landowners; reviewing aerial photographs and maps of the Project area; and through field surveys conducted

in 2014 through 2016. Transco *has coordinated* with appropriate federal, state, and municipal agencies on proposed crossings on public lands to minimize effects on recreation.

Land use effects resulting from transportation and residential/commercial developments in the vicinity of the Project are expected to be minimal due to the scope and nature of the work (as in the case of the transportation Projects) or because of the minimal or lack of activity (as in the residential/commercial developments). Land use effects associated with other natural gas pipelines would be similar to those for the Project, with similar mitigation measures and effect avoidance measures being implemented. Based on the above analysis, Transco believes there will be no significant measurable cumulative effects of the Project on land use.

Visual effects associated with construction activities will result from the removal of vegetation, particularly in forested areas. These effects will be observed where the pipeline parallels or crosses roads and where vegetation is removed between the ROWs and residences. Potential mitigation measures may include planting visual screens along roadways and in residential areas in coordination with regulatory agencies, as necessary. While temporary visual effects on the landscape will occur during Project construction due to clearing, grading, and construction activities, Transco will restore disturbed areas in accordance with the Transco Plan and Transco Procedures (Attachments 17 and 18 of the Transco ECP (**Attachment M**)).

In summary, Transco believes there will be no significant measurable cumulative effects of the Project on land use, recreation, or visual resources.

E. Other Impacts to Water Resources Required to fulfill the Purposes of the Project

As described in **Attachment J – Project Description**, the Atlantic Sunrise Project involves water obstructions and encroachments in 10 counties: Clinton, Lycoming, Susquehanna, Wyoming, Luzerne, Columbia, Northumberland, Schuylkill, Lebanon and Lancaster counties. **This permit application package identifies the water obstructions and encroachments required in Luzerne County.** Transco is submitting separate applications that will identify the water obstructions and encroachments in the other counties, as applicable.

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