2.0 Water Use and Quality

Resource Report 2 – Water Use and Quality
FERC Environmental Checklist

	Part 380-Appendix A Minimum Filing Requirements for Environmental Reports	Company Compliance or Inapplicability of Requirement
☐	Identify all perennial surface waterbodies crossed by the Project and their water quality classification. (§380.12(d)(1))	Sections 2.2.1 and 2.2.4
☐	Identify all waterbody crossings that may have contaminated waters or sediments. (§380.12(d)(1)).	Section 2.2.2 and 2.2.4
☐	Identify watershed areas, designated surface water protection areas, and sensitive waterbodies crossed by the Project. (§380.12(d)(1)).	Sections 2.2.3 and 2.2.4, Table 2.2-1, and Appendix C
☐	Provide a table (based on NWI maps if delineation's have not been done) identifying all wetlands, by milepost (MP) and length, crossed by the Project (including abandoned pipeline), and the total acreage and acreage of each wetland type that would be affected by construction. (§380.12(d)(1 & 4)).	Table 2.3-1 and Appendix I
☐	Discuss construction and restoration methods proposed for crossing wetlands, and compare them to staff's Wetland and Waterbody Construction and Mitigation Procedures. (§380.12(d)(2)).	Section 2.3.2 and 2.3.3
☐	Describe the proposed waterbody construction, impact mitigation, and restoration methods to be used to cross surface waters and compare to the staff's Wetland and Waterbody Construction and Mitigation Procedures. (§380.12(d)(2)).	Section 2.2.7
☐	Provide original NWI maps or the appropriate state wetland maps, if NWI maps are not available, that show all proposed facilities and include MP locations for proposed pipeline routes. (§ 380.12(d)(4)).	Appendix D
☐	Identify all U.S. Environmental Protection Agency (USEPA) or state- designated aquifers crossed. (§ 380.12(d)(9)).	Section 2.1.1

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2.0 RESOURCE REPORT 2 - WATER USE AND QUALITY

Texas Eastern Transmission, LP (Texas Eastern) is seeking authorization from the Federal Energy Regulatory Commission (FERC or the Commission) pursuant to Sections 7(b) and 7(c) of the Natural Gas Act (NGA) for the abandonment of certain facilities and the construction and operation of the Texas Eastern Appalachia to Market 2014 Project (TEAM 2014 or the Project) located in Pennsylvania, West Virginia, Ohio, Kentucky, Tennessee, Alabama, and Mississippi. The TEAM 2014 Project is designed to deliver critically needed natural gas supplies that will meet immediate and future supply and load growth requirements in diverse markets in the Northeast, Midwest, Southeast, and Gulf Coast.

Resource Report 2 describes the hydrological setting of the Project area and details the surface water and groundwater that may be affected, directly or indirectly, by construction and operation of the proposed facilities. The following sections provide data collected from field reconnaissance, review of available technical literature, and consultation with various Federal, state, and local regulatory authorities concerning water quality issues potentially related to the proposed Project.

All information within each section is presented in order from the westernmost segment to the easternmost segment of the Pennsylvania expansion facilities followed by the bi-directional flow modifications.

2.1 Groundwater Resources

2.1.1 Description of Groundwater Resources

Holbrook Loop

The Holbrook Loop is in Fayette County, Pennsylvania and is underlain by the Permian and Pennsylvanian aquifers of the Appalachian Plateaus Province (USGS, 2010a).

In southwestern Pennsylvania, consolidated rocks nearest the surface are mostly Pennsylvanian in age (290 to 323 million years [Ma] ago). Pennsylvanian rocks are principal coal-bearing formations and consist of cyclic sequences of sandstone, shale, conglomerate, clay, coal, and minor limestone. The sandstones are the most productive aquifers, although coal beds and limestone also yield water. However, the limestones are thin compared to those of the Valley and Ridge Physiographic Province (USGS, 2010a).

The Appalachian Plateaus Province is underlain by rocks that are continuous with those of the Valley and Ridge Physiographic Province, but in the Appalachian Plateaus, the layered rocks are nearly flat-lying or gently tilted and warped, rather than being intensively folded and faulted. Permian rocks are similar in lithology and water-yielding characteristics to Pennsylvanian rocks, but were not deposited in cycles. They contain only thin coal beds and consist of more shale and less sandstone and conglomerate than the Pennsylvanian strata. The combination of rock type and geologic structure largely determines the hydraulic properties of the rocks. These factors, plus topography and climate, determine the characteristics of the groundwater flow system throughout the area (USGS, 2010a).

The chemical quality of water in the freshwater parts of bedrock aquifers of the Appalachian Plateaus Province is somewhat variable, but generally is satisfactory for municipal supplies and other purposes. Most of the water in the upper parts of the aquifers is not greatly mineralized and is suitable, or can be treated and made suitable, for most uses. The undifferentiated sedimentary-rock aquifers consist principally of sandstone and fractured shale and coal. Most of the minerals

that compose these aquifers do not readily dissolve, with dissolved-solids concentrations averaging only about 230 milligrams per liter (mg/L). Hardness averages about 95 mg/L, which is considered moderately hard. The median pH is 7.3. The median iron concentration is about 0.1 mg/L, but can be as large as 38 mg/L. The water is mostly a calcium sodium bicarbonate type. Saline water is commonly found in the aquifers at depths of only a few hundred feet below the land surface. In coal-mining areas, groundwater commonly includes water that has been in contact with mine workings or that has infiltrated and leached mine spoil piles. Water affected by coal-mining operations may be acidic due to the generation of sulfuric acid because of water contacting sulfur-bearing rock. The acid water commonly contains large concentrations of iron, manganese, sulfate, and dissolved solids and is highly colored (USGS, 2010a).

The Appalachian Plateaus Province aquifers are in Paleozoic sedimentary rocks that are flat-lying or gently folded. The Paleozoic sedimentary rocks consist of conglomerate, sandstone, siltstone, mudstone, shale, coal, limestone, and dolomite. The sandstone and limestone beds are the most productive aquifers in these rocks. Carbonate rocks of Mississippian age are also productive aquifers in many locations. Fresh groundwater generally circulates only to shallow depths in the Appalachian Plateaus Province (USGS, 2010a). Highly mineralized groundwater is shallowest beneath valleys, thus limiting the depth of valley wells used for domestic supply, yet high-yield wells are possible in major valleys (Stoner et al., 1987). Small volumes of water are obtained locally from conglomerate beds of Pennsylvanian age. The principal water-yielding geologic units in the area are sandstones of the Permian (248 to 290 Ma ago) and Pennsylvanian Dunkard Group through the Mississippian and Devonian Pocono Formation (354 to 417 Ma ago). Reported typical yields of wells in all these units range from 30 to 300 gallons per minute (gpm), but some wells yield as much as 600 gpm (USGS, 2010a).

USGS has monitored a representative observation well in the shale and sandstone of late Pennsylvanian and early Permian age in Fayette County, Pennsylvania for 37 years. The well is located about 10 miles south of the Holbrook Loop and has a recorded depth to groundwater varying from 23 to 53 feet below ground surface (bgs) (USGS, 2010b).

No U.S. Environmental Protection Agency (USEPA) or state-designated sole source aquifers are located in Fayette County, Pennsylvania (U.S. Department of Agriculture [USDA], 2005 and USEPA, 2010).

Perulack West Loop

The Perulack West Loop is in Perry County, Pennsylvania and is underlain by the Paleozoic (443 to 570 Ma ago) carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province (USGS, 2010a).

The geologic structure of the Valley and Ridge Physiographic Province is complex, but the process principally responsible for the present configuration of the rock layers was displacement to the northwest. Some movement took place along low-angle reverse faults; rocks of the Blue Ridge Province and the Reading Prong were thrust northwestward over layered sedimentary rocks of the Valley and Ridge Physiographic Province for tens of miles, and the layered rocks, in turn, were broken into slices that slid over each other. At and near the land surface, the beds were folded into nearly parallel, northeast-trending anticlines and synclines. Folding is most intense in the parts of the Valley and Ridge Province in New Jersey and central to northeastern Pennsylvania (USGS, 2010a).

The Great Valley, ranging from 10 to 20 miles wide, is the most pronounced and persistent valley in the Valley and Ridge Physiographic Province. It is floored with easily eroded rock, such as shale, slate, or carbonate rocks. The western boundary of the valley is the first persistent mountainous ridge of resistant sedimentary rock. The part of the Valley and Ridge Physiographic Province northwest of the Great Valley consists of persistent mountain ridges underlain by resistant sandstone, conglomerate, and quartzite, which alternate with valleys floored with shale or slate and carbonate rocks (USGS, 2010a).

The Valley and Ridge Physiographic Province is widest in Pennsylvania. The Great Valley in Pennsylvania is floored with lower Paleozoic carbonate rocks and shale. Principal water-yielding geologic units are limestone and dolomitic limestone of the Waynesboro Formation through the St. Paul Group (Cambrian and Ordovician ages), with well yields reported to range from 25 to 210 gpm. Yields from sandstone of the Martinsburg Formation, by contrast, only range from 10 to 30 gpm. Northwest of the Great Valley, the uppermost Paleozoic rocks in central to northeastern Pennsylvania are coal-bearing beds of Pennsylvanian age mostly associated with the anthracite coalfields where deeply infolded beds of coal were preserved from erosion. The processes of folding and deep burial drove off most of the volatile content of the bituminous coal in the more intensely folded areas and converted it to anthracite. Pennsylvanian rocks consist of sandstone, which is coarse or conglomeratic in some places; gray and black shale and claystone; thin beds of limestone; and coal (USGS, 2010a).

Water in the Valley and Ridge Physiographic Province aquifers moves mostly along fractures and bedding planes in all rock types, and in solution openings in the carbonate rocks. These types of openings are secondary porosity that formed after the rocks were deposited and lithified; almost all of the original primary pore space between individual mineral grains or rock particles was filled with fine-grained material or mineral cement during the process of lithification of the rocks (USGS, 2010a).

The chemical quality of water in the aquifers of the Valley and Ridge Physiographic Province is somewhat variable but is generally suitable for municipal supplies and other purposes. Most of the water in the upper parts of the aquifers is not greatly mineralized and is suitable for drinking and most other uses. However, the deep parts of the aquifers contain saline water in many places and brackish water has been reported locally from zones as shallow as 90 feet below the land surface in valleys near the West Branch of the Susquehanna River in Pennsylvania (USGS, 2010a).

The carbonate-rock aquifers consist mainly of calcium and magnesium carbonate, which are readily dissolved and thus affect the chemical composition of groundwater. Waters from these aquifers have dissolved-solids concentrations that average about 330 mg/L and hardness that averages about 280 mg/L, which is considered to be very hard. The median hydrogen ion concentration, which is measured in pH units, is slightly basic at 7.4; dissolution of calcium and magnesium carbonate minerals raises the pH of the water and increases the hardness. The median iron concentration is 0.1 mg/L, which is considered to be low, but concentrations as large as 8 mg/L have been reported. Water in the carbonate-rock aquifers is mostly a calcium plus magnesium bicarbonate (USGS, 2010a).

The undifferentiated sedimentary rock aquifers consist principally of fractured sandstone but locally include fractured shale. The minerals that compose these rocks are chiefly silicates, which are much less soluble than those that compose the carbonate-rock aquifers. The water is mostly a calcium bicarbonate type with small dissolved-solids concentrations averaging only about 150 mg/L. Hardness averages about 100 mg/L, and the water is considered to be moderately hard.

The median hydrogen ion concentration, which is measured in pH units, is 7.4. The median iron concentration is about 0.1 mg/L, but concentrations as large as 14 mg/L have been reported. In some coal-mining areas, the groundwater is mixed with acidic mine water, which can contain large concentrations of iron, manganese, sulfate, and dissolved solids (USGS, 2010a).

USGS has monitored a representative observation well in Juniata County, Pennsylvania since 1968. This well was selected over the representative observation well in Perry County due to its proximity to the Project segments. The well is located less than 6 miles northwest of the Perulack West Loop and has a recorded depth to groundwater varying from 11 to 16 feet bgs (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Perry County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Perulack East Loop

The Perulack East Loop is in Perry County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Perulack West Loop. The representative observation well, located in Juniata County, is located less than 11 miles from the Perulack East Loop and has a recorded depth to groundwater varying from 11 to 16 feet bgs (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Perry County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Shermans Dale Loop

The Shermans Dale Loop is in Dauphin County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a).

USGS has monitored a representative observation well in Dauphin County, Pennsylvania since late 2002. The well is located less than 4 miles east of the Shermans Dale Loop and has a recorded depth to groundwater varying from 7 to 22 feet bgs (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Dauphin County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Grantville West Loop

The Grantville West Loop is in Lebanon County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a).

USGS has monitored a representative observation well in Lebanon County, Pennsylvania since 1973. The well is located less than 11 miles east of the Granville West Loop and has a recorded depth to groundwater varying from 3 to 11 feet bgs (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Lebanon County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Grantville East Loop

The Grantville East Loop is in Lebanon County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a).

Groundwater resources for this location are similar in nature to those described for the Grantville West Loop. The USGS monitored representative observation well is located less than four miles from the Grantville East Loop and has a recorded depth to groundwater varying from 3 to 11 feet bgs (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Lebanon County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Bernville Loop

The Bernville Loop is in Berks County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a).

USGS has monitored a representative observation well in Berks County, Pennsylvania since 1975. The well is located less than 2 miles north of the Bernville Loop and has a recorded depth to groundwater varying from 123 to 140 feet bgs (USGS, 2010b).

No USEPA or State Designated Sole Source Aquifers are located in Berks County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Uniontown Compressor Station

The Uniontown Compressor Station is in Fayette County, Pennsylvania and is underlain by the Permian and Pennsylvanian aquifers of the Appalachian Plateaus Province (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Holbrook Loop.

No USEPA or state-designated sole source aquifers are located in Fayette County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Delmont Compressor Station

The Delmont Compressor Station is in Westmoreland County, Pennsylvania and is underlain by Permian and Pennsylvanian aquifers of the Appalachian Plateaus Province as described above (USGS, 2010a).

USGS has monitored a representative observation well in Westmoreland County, Pennsylvania since 1968. The well is located less than 26 miles east of the Delmont Compressor Station and has a recorded depth to groundwater varying from 14 to 19 feet bgs (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Westmoreland County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Armagh Compressor Station

The Armagh Compressor Station is in Indiana County, Pennsylvania and is underlain by Permian and Pennsylvanian aquifers of the Appalachian Plateaus Province as described above (USGS, 2010a).

USGS has monitored a representative observation well in Westmoreland County, Pennsylvania since 1968. The well is located less than 6 miles north of the Armagh Compressor Station and has a recorded depth to groundwater varying from 14 to 19 feet bgs. The Westmoreland well was selected rather than the representative observation well in Indiana County, Pennsylvania due to proximity to the compressor station (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Indiana County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Entriken Compressor Station

The Entriken Compressor Station is in Huntingdon County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a).

USGS has monitored a representative observation well in Huntingdon County, Pennsylvania since 1969. The well is located less than 4 miles north of the Entriken Compressor Station and has a recorded depth to groundwater varying from 51 to 55 feet bgs (USGS, 2010b).

No USEPA or state-designated sole source aquifers are located in Huntingdon County, Pennsylvania (USDA, 2005 and USEPA, 2010).

National Pike Wareyard

The National Pike Wareyard is in Fayette County, Pennsylvania and is underlain by the Permian and Pennsylvanian aquifers of the Appalachian Plateaus Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Holbrook Loop.

No USEPA or state-designated sole source aquifers are located in Fayette County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Highway 119 Wareyard

The Highway 119 Wareyard is in Fayette County, Pennsylvania and is underlain by the Permian and Pennsylvanian aquifers of the Appalachian Plateaus Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Holbrook Loop.

No USEPA or state-designated sole source aquifers are located in Fayette County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Flea Market Wareyard

The Flea Market Wareyard is in Juniata County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Perulack West Loop.

No USEPA or state-designated sole source aquifers are located in Juniata County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Stone Quarry Wareyard

The Stone Quarry Wareyard is in Franklin County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Perulack West Loop.

No USEPA or state-designated sole source aquifers are located in Franklin County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Bottom Road Wareyard

The Bottom Road Wareyard is in Perry County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Perulack West Loop.

No USEPA or state-designated sole source aquifers are located in Perry County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Highway 22-1 Wareyard

The Highway 22-1Wareyard is in Lebanon County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Grantville West Loop.

No USEPA or state-designated sole source aquifers are located in Lebanon County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Highway 22-2 Wareyard

The Highway 22-2 Wareyard is in Lebanon County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Grantville West Loop.

No USEPA or state-designated sole source aquifers are located in Lebanon County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Highway 61 Wareyard

The Highway 61 Wareyard is in Berks County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a).

No USEPA or State Designated Sole Source Aquifers are located in Berks County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Doughten Road Wareyard

The Doughten Road Wareyard is in Cumberland County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province

as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Perulack West Loop.

No USEPA or state-designated sole source aquifers are located in Cumberland County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Prescott Drive Wareyard

The Prescott Drive Wareyard is in Lebanon County, Pennsylvania and is underlain by the Paleozoic carbonate rock and sandstone aquifers of the Valley and Ridge Physiographic Province as described above (USGS, 2010a). Groundwater resources for this location are similar in nature to those described for the Grantville West Loop.

No USEPA or state-designated sole source aquifers are located in Lebanon County, Pennsylvania (USDA, 2005 and USEPA, 2010).

Bi-Directional Flow Facilities

All activities associated with bi-directional flow facilities will take place entirely within Texas Eastern's right-of-way (ROW) and within the boundaries existing facility sites, with one exception, a pipeline crossover installation located on the existing pipeline ROW north of the Kosciusko Compressor Station in Attala County, Mississippi. At the Kosciusko Pipeline Crossover, workspace for staging and a new permanent access road will be required outside of previously disturbed areas. The installed crossover facilities will be located within the existing pipeline easement. Accordingly, it is anticipated that groundwater resources will not be impacted.

The Kosciusko Pipeline Crossover area is underlain by the Lower Claiborne-Upper Wilcox aquifer of the Mississippi embayment aquifer system (USGS, 2010a). The aquifer is made up of highly permeable sands that contain large volumes of freshwater over an extensive area. The lower Claiborne-upper Wilcox aquifer is recharged by the infiltration of precipitation that falls on topographically high aquifer outcrop areas. Natural discharge occurs as evapotranspiration, loss of water to streams in outcrop areas, and as upward leakage in downdip areas. Recharge and discharge are generally less than 1 inch per year in areas that have little or no pumpage. Water in the aquifer is generally unconfined in aquifer outcrop areas where the specific yield for the sandy deposits might range between 10 and 30 percent. Water is confined in downdip areas by the overlying lower Claiborne confining unit (USGS, 2010a).

The Mississippi embayment aquifer system extends eastward from Arkansas to northwestern Mississippi and comprises six aquifers that crop out as an arcuate band of poorly consolidated to unconsolidated, bedded sand, silt and clay. Geologic units of the aquifer system range from Late Cretaceous to middle Eocene (100 to 40.4 Ma ago) in age. In the embayed part of the Gulf Coastal Plain of eastern Arkansas, northeastern Louisiana, and northwestern Mississippi, the southward-dipping strata of the Mississippi embayment aquifer system are hydraulically connected to the Mississippi River Valley alluvial aquifer (USGS, 2010a).

The Mississippi embayment aquifer system ranges in thickness from a featheredge to more than 6,000 feet. The aquifer system thickens eastward and westward from its updip limits toward the axis of the Mississippi Embayment. The aquifer system is thickest in south-central Louisiana and southwestern Mississippi. Three of the system's six aquifers, the upper and the middle Claiborne and the lower Claiborne-upper Wilcox aquifers, become increasingly clayey and pinch out to the south. Some of the clayey confining units pinch out northward as they become increasingly sandy and more permeable. The lower Claiborne-upper Wilcox aquifer is in direct hydraulic contact

near the western side of the embayment. Unlike other aquifers within the Mississippi embayment system, the lower Claiborne-upper Wilcox aquifer is not separated by confining units. Sandy strata of the Wilcox Group are more heterogeneous than other rocks of Tertiary age and consist of a highly variable sequence of massive to thinly bedded sand and thin clay beds that are part of the three aquifers. The middle Wilcox aquifer differs considerably from overlying and underlying aquifers because its thin beds of sand and clay result in lower hydraulic conductivity than that of the massive, more permeable strata that lie above and below it (USGS, 2010a).

2.1.2 Public and Private Water Supply Wells and Septic Systems

Public and private water supply wells and septic systems were identified near the Project through site-specific field surveys within the study corridor where landowners allowed access, as well as through desk top analysis using the Pennsylvania Department of Environmental Protection (PADEP)'s *eMapPA*, and the Pennsylvania Geological Survey's Pennsylvania Ground Water Information System (PAGWIS). Additionally, Environmental FirstSearch (FirstSearch), a database research company, conducted a comprehensive file search of Federal and state databases and related information within the Project's study area. Information concerning private water wells and septic systems within 200 feet of the proposed construction areas is contained in Tables 2.1-1 and 2.1-2.

2.1.3 Groundwater Impact and Mitigation

The majority of construction activities associated with the Project will involve shallow excavation, typically less than 10 feet. The majority of aquifers underlying the proposed Project are below the excavation depth of most activities.

No impacts are expected where groundwater is 11 feet bgs or greater. In pipeline excavation areas where groundwater may be within 10 feet of the surface, dewatering of the pipeline trench may be required. Trenching and backfilling activities during construction could affect local water table elevations, which could cause temporary effects to springs and wetlands. Trench dewatering may cause temporary fluctuations in local groundwater levels. However, since trench-dewatering activities are usually completed in fewer than three days within a particular location, impacts are expected to be of short duration and temporary. All trench water will be discharged into well-vegetated upland areas or properly constructed dewatering structures to allow the water to infiltrate back into the ground and aquifer, thereby minimizing the dewatering impacts.

Spills or leaks of hazardous liquids, resulting from refueling of construction vehicles and storage of fuel, oil, and other fluids during construction, could contaminate groundwater aquifers and the users of the groundwater. A copy of Texas Eastern's Spill Prevention, Control, and Countermeasures (SPCC) Plan is included as Appendix H. The SPCC Plan identifies preventative measures to be used during construction to minimize the potential for a hazardous material spill on groundwater resources. The Project will also comply with the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* (*Plan*, 1/17/03 version) and *Wetland and Waterbody Construction and Mitigation Procedures* (*Procedures*, 1/17/03 version), which prohibit refueling and storage of hazardous materials within 200 feet of all private wells, and within 400 feet of municipal or community water supply well (FERC, 2003a and FERC, 2003b).

Through a combination of desktop analysis and field surveys, a total of six wells were identified within 200 feet of the study corridor, two of which were confirmed during field surveys. If any blasting is required within 200 feet of any wells, pre- and post-construction monitoring of well yield and water quality will be conducted, with the well owner's permission. If it is determined that any

private water supply is damaged because of the Project, Texas Eastern will ensure that a temporary source of water is provided until the damaged supply well is restored to its former capacity.

Where possible, septic systems within the study corridor will be avoided during construction. If any blasting is required within 200 feet of any septic systems, pre- and post-construction monitoring of the integrity of the system will be conducted, with the septic systems owner's permission. If it is determined that any septic system is disrupted or damaged because of the Project, Texas Eastern will ensure suitable temporary sanitary facilities are provided, temporary housing for landowner is provided and that the septic system is restored to its former capacity or replaced. Through field investigations, nine septic systems were identified within 200 feet of the Project.

2.2 Surface Water Resources

2.2.1 Waterbodies

After reviewing USGS 7.5 minute topographic maps and completing a desktop Critical Issues Analysis, surface waterbodies were identified during field surveys conducted in summer and fall 2012. Each waterbody location was surveyed in the field using a Global Positioning System unit, identified with a specific number (i.e., initials of discharge and sequential numbers for each waterbody or wetland crossing). Additionally, photos of each feature were taken and compiled into a photo log for each feature, which can be found in each wetland delineation report (WDR). Waterbody crossing data include:

- Stream width and depth;
- Flow regime;
- Adjacent land use and riparian corridor;
- Vegetative communities;
- Bank height; and
- Aquatic resource habitat.

Streams were categorized as minor if the crossing was less than 10 feet wide, intermediate if the crossing was between 11 and 100 feet, and major if the crossing was greater than 100 feet.

In total, 84 ephemeral streams, 67 intermittent streams, 51 perennial streams, and 18 ponds were identified among the Project pipeline segments, compressor stations, wareyards, and bi-directional flow facilities. Within the same Project areas, 18 channels were delineated as ephemeral drainages; these channels lacked a defined bed and bank and ordinary high water mark (OHWM). These features were not counted in the presented waterbody totals. Of those streams identified, 175 were minor waterbodies, 24 were intermediate waterbodies, and 3 were major waterbodies. The information obtained for perennial streams is noted within the descriptions below, while information for all other waterbody features can be found in Table 2.2-1 and the WDRs found in Appendix I.

Proposed permanent access roads (PARs) and temporary access roads (TARs) were surveyed along the loop segments and any perennial waterbody features that were identified in association with them are listed below. Table 2.2-1 contains a listing of all waterbodies identified within the Project areas. Table 2.2-5 contains a summary table of Project impacts to waterbodies and wetlands. The Project has been sited to avoid and minimize impacts to waterbodies to the maximum extent practicable.

Holbrook Loop

Field investigations identified 30 (17 ephemeral, 9 intermittent, and 4 perennial) waterbody segments (H_S01 through H_S21, H_S23, H_S24, H_S24A, H_S24B, H_S24C, H_S25, and H_S30 to H_S32) and three ponds (H_P01 to H_P03) within the environmental study corridor of the Holbrook Loop. Three of these identified waterbody segments (H_S25, H_S32, and H_S31) are associated with proposed TARs. The following descriptions of the perennial streams are given as they occur along the Project segment from west to east. Additional information on intermittent and ephemeral streams and ponds can be found in Table 2.2-1 and the Holbrook Loop WDR found in Appendix I-1.

The following four perennial streams were identified within the environmental study corridor:

- **H_S24A** is a perennial stream, Dunlap Creek that flows east to west through the existing and maintained ROW and forested northern portion of the environmental study corridor. H_S24A was approximately 15 feet wide at the OHWM and contained approximately 6 inches of water within its channel at the time of survey. The primary substrate is gravel. The riparian corridor consists of maintained ROW and forest. The stream has sloughing banks.
- **H_S06** is a perennial stream, Dunlap Creek that flows northeast to southwest through the existing and maintained ROW and forested northern portion of the environmental study corridor. H_S06 was approximately 4 feet wide at the OHWM and contained approximately 4 inches of water within its channel at the time of survey. The primary substrate is silt. The riparian corridor consists of maintained ROW and forest. The stream has sloughing banks.
- **H_S13** is the perennial stream Jennings Run that flows south to north through the existing and maintained ROW and non-forested northern portion of the environmental study corridor. H_S13 was approximately 6 feet wide at the OHWM and contained approximately 3 inches of water within its channel at the time of survey. The primary substrate is gravel. The riparian corridor consists of maintained ROW and open field.
- **H_S30** is the perennial stream Jennings Run, a RPW that flows south to north under a bridge on TAR 5.8. H_S30 was approximately 30 feet wide at the OHWM and contained approximately 60 inches of water within its channel at the time of survey. The primary substrate was silts. The riparian corridor consisted of shrub-dominated field.

Perulack West Loop

Field investigations identified 11 (five intermittent and six perennial) waterbody segments (PW_S01 to PW_S11) and one pond (PW_P01) within the environmental study corridor of the Perulack West Loop. One of these identified waterbody segments (PW_S11) is associated with a proposed PAR. The following descriptions of each the perennial streams are given as they occur along the Project segment from west to east. Additional information on intermittent and ephemeral streams can be found in Table 2.2-1 and the Perulack West and East Loops WDR found in Appendix I-2.

The following six perennial streams were identified within the environmental study corridor:

- **PW_S07** is a perennial UNT to Bowers Run, which flows northwest to southeast through both the existing ROW and the forested southern portion of the environmental study corridor. The stream enters the environmental study corridor near MP 1.4. PW_S07 was approximately 2 feet wide at the OHWM and contained approximately 3 inches of water within its channel at the time of survey. The primary substrate is cobble and the riparian corridor consists of maintained ROW and forest. The stream is heavily braided downstream.

- **PW_S05** is a perennial UNT to Bowers Run, which flows north to south through both the existing ROW and the forested southern portion of the environmental study corridor. The stream enters the environmental study corridor near MP 1.6. PW_S05 was approximately 2 feet wide at the OHWM and contained approximately 2 inches of water within its channel at the time of survey. The primary substrate is cobble and the riparian corridor consists of maintained ROW and forest.

- **PW_S01** is a perennial UNT to Bowers Run, which flows northwest to southeast within the existing ROW and forested southern portion of the environmental study corridor. PW_S01 is approximately 1 foot wide at the OHWM and contained approximately 1 inch of water within its channel at the time of survey. The primary substrate is cobble and the riparian corridor consists of maintained ROW and forest. A significant portion of flow from PW_S01 has been artificially diverted to maintain an engineered impoundment (PW_P01).

- **PW_S03** is a perennial UNT to Bowers Run, which flows north to south through the forested southern portion of the environmental study corridor. PW_S03 is approximately 4 feet wide at the OHWM and contained approximately 2 inches of water within its channel at the time of survey. The primary substrate is cobble and the riparian corridor consists of forest. The stream has sloughing banks and stems from PW_S01.

- **PW_S10** is a perennial UNT to Bowers Run, which flows north to south through the environmental study corridor. The stream enters the environmental study corridor near MP 2.5. PW_S10 was approximately 9 feet wide at the OHWM and contained approximately 2 inches of water within its channel at the time of survey. The primary substrate is gravel and the riparian corridor consists of maintained ROW and a very narrow scrub shrub corridor.

- **PW_S11** is the second crossing of the same stream mentioned in PW_S10, as it flows and northwest to southeast underneath PAR 2.7 through an existing 36-inch culvert. PW_S11 is approximately 9 feet wide at the OHWM and contained approximately 2 inches of water within its channel at the time of survey. The primary substrate is gravel. The riparian corridor consists of maintained ROW and a very narrow scrub shrub corridor.

Perulack East Loop

Field investigations identified nine (three ephemeral, two intermittent, and four perennial) waterbody segments (PE_S01 to PE_S6, PE_S08, PE_S09, and PE_S11) within the environmental study corridor of the Perulack East Loop. Of these identified waterbody segments, two (PE_S01 and PE_S08) are associated with proposed TARs. The following descriptions of the perennial streams are given as they occur along the Project segment from west to east. Additional information on intermittent and ephemeral streams can be found in Table 2.2-1 and the Perulack West and East Loops WDR found in Appendix I-2.

The following four perennial streams were identified within the environmental study corridor:

- **PE_S03** is a perennial UNT to Bixler Run, which flows southwest to northeast through both the existing ROW, as well as the forested northern portion of the environmental study corridor. PE_S03 is approximately 10 feet wide at the OHWM and contained approximately 5 inches of water within its channel at the time of survey. The primary substrate is silt and the riparian corridor consists of both maintained ROW and forest.

- **PE_S04** is Bixler Run, a perennial stream, which flows northwest to southeast through the environmental study corridor. Generally, PE_S04 is approximately 50 feet wide at OHWM and contained greater than 36 inches of water within its channel; however, one short portion

of the reach was made up of riffles where the water was approximately 6 inches deep at the time of survey. The primary substrate is gravel and the riparian corridor consists of both maintained ROW and scrub-shrub. The banks of the channel were highly erodible.

- **PE_S05** is a perennial UNT to Bixler Run, which flows north to south underneath TAR 3.4 through an existing culvert and through the non-forested environmental study corridor and existing and maintained ROW. The stream enters the environmental study corridor near MP 3.4. PE_S05 was approximately 6 feet wide at OHWM and contained approximately 10 inches of water within its channel at the time of survey. The primary substrate is silt and the riparian corridor consists of both maintained ROW and herbaceous cover. The channel had sloughing banks.

- **PE_S08** is a perennial UNT to Bixler Run, which flows northeast to southwest through both the existing ROW and the forested northern and southern portions of the environmental study corridor, along TAR 3.8. PE_S08 is approximately 4 feet wide at OHWM and contains approximately 3 inches of water within its channel at the time of survey. The primary substrate is gravel and the riparian corridor consists of both maintained ROW and forest. The channel has sloughing banks.

Shermans Dale Loop

Field investigations identified 45 (four ephemeral, 29 intermittent, and 12 perennial) waterbody segments (SD_S01 through SD_S19, SD_S21 to SD_S34, SD_S39, SD_S40, SD_S47 to SD_S51, and SD_S53 to SD_S57) and one pond (SD_P01) within the environmental study corridor of the Shermans Dale Loop. Of these identified waterbody segments, nine (SD_S12, SD_S56, SD_S14, SD_S51, SD_S50, SD_S49, SD_S48, SD_S47, and SD_P01) are associated with a proposed access roads. The following descriptions of the perennial streams are given as they occur along the Project segment from west to east. Additional information on intermittent and ephemeral streams can be found in Table 2.2-1 and the Shermans Dale Loop WDR found in Appendix I-3.

The following 12 perennial streams were identified within the environmental study corridor:

- **SD_S06** is a perennial UNT to Stony Creek that flows northwest to east through the forested northern portion of the environmental survey corridor. SD_S06 was approximately 6 feet wide at the OHWM and contained approximately 4 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of forest.

- **SD_S11** is a perennial UNT to Stony Creek that flows northwest to southeast through the forested northern portion of the environmental study corridor. SD_S11 was approximately 6 feet wide at the OHWM and contained approximately 8 inches of within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of forest and maintained ROW. The stream has undercut banks.

- **SD_S12** is a perennial reach of Stony Creek that flows northeast to southwest through the existing ROW and the forested northern and southern portions of the environmental study corridor as well as under TAR 2.0. SD_S12 was approximately 80 feet wide at top of bank (TOB) and contained approximately 18 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of both maintained ROW and forest. The stream has undercut banks.

- **SD_S56** is a perennial UNT to Stony Creek that flows southwest to north through the forested northern portion of the environmental study corridor and continues to the north of the

environmental study corridor. SD_S56 was approximately 15 feet wide at the OHWM and contained approximately 12 inches of water in its channel at the time of survey. The primary substrate is silts. The riparian corridor consists of forested wetland.

- **SD_S14** is a perennial reach of Fishing Creek that flows northeast to southwest under TAR 3.9 and through scrub shrub portions both east and west of the access road. The stream crosses the access road parallel to the Shermans Dale Loop near MP 4.2. The stream was approximately 20 feet wide at OHWM and contained approximately 24 inches of water in the channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of scrub shrub within the access road study corridor. The stream has undercut banks.

- **SD_S53** is a perennial UNT to Fishing Creek that flows south to north originating south of the maintained lawn environmental study corridor and flows into SD_S52. SD_S53 was approximately 6 feet wide at the OHWM and contained approximately 2 inches of water in the channel at the time of survey. The primary substrate is composed of silts. The riparian corridor consists of palustrine emergent (PEM) wetland and forest.

- **SD_S27** is a perennial reach of Fishing Creek that flows west to east through both the existing ROW and forested portions on both sides of the environmental study corridor. The stream was approximately 27 feet wide at the OHWM and contained greater than 36 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of both maintained ROW and forest.

- **SD_S26** is a perennial UNT to Fishing Creek that flows north to south through both the existing ROW and forested northern portion of the environmental study corridor. The stream was approximately 3 feet wide at the OHWM and contained approximately 12 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of maintained ROW and forest.

- **SD_S28** is a perennial UNT to Fishing Creek that flows south to north through the forested southern portion of the environmental study corridor as well as the existing ROW. The stream was approximately 4 feet wide at the OHWM and contained approximately 12 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of maintained ROW and forest.

- **SD_S22** is a perennial UNT to Fishing Creek that flows south to north through the existing ROW and forested northern and southern portions of the environmental survey corridor. The stream was approximately 3 feet wide at the OHWM and contained approximately 6 inches of water within its channel at the time of survey. The primary substrate is silt. The riparian corridor consists of both maintained ROW and forest.

- **SD_S32** is a perennial UNT to Fishing Creek that flows from south to north through the existing ROW and forested northern portion of the environmental study corridor. SD_S32 was approximately 3 feet wide at OHWM and contained 18 inches of water in the channel at the time of survey. The primary substrate is silts. The riparian corridor is forest and maintained ROW.

- **SD_S34** is a perennial UNT to Fishing Creek that flows south to north through both the existing ROW and forested northern portion of the environmental su**r**vey **c**orridor. The stream was approximately 6 feet wide and contained approximately 24 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of both maintained ROW and forest. The stream banks are highly erodible.

Grantville West Loop

Field investigations identified 11 (four ephemeral, two intermittent, and five perennial) waterbody segments (GW_S01 to GW_S06 and GW_S08, GW_S09, and GW_S11 to GW_S13) and four ponds (GW_P01 to GW_P04) within the environmental study corridor of the Grantville West Loop. Four of these identified resources (GW_S01, GW_S08, GW_S09, and GW_P04) are associated with a proposed access roads. The following descriptions of the perennial streams are given as they occur along the Project segment from west to east. Additional information on intermittent and ephemeral streams can be found in Table 2.2-1 and the Grantville West and East Loops WDR found in Appendix I-4.

The following five perennial streams were identified within the environmental study corridor:

- **GW_S03**, Swatara Creek, is a perennial stream that flows from south to north across the existing and maintained ROW and extends past the forested northern and southern portions of the environmental study corridor. GW_S03 was greater than 50 feet wide at the OHWM and contained more than 5 inches of water in its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of maintained ROW and forest.
- **GW_S05** is a perennial UNT to Swatara Creek, which flows northwest to southeast within the existing ROW through an existing 30-inch metal culvert and into the forested southern portion of the environmental study corridor. GW_S05 was approximately 8 feet wide at the OHWM and contained approximately 1 foot of water within its channel at the time of survey. The primary substrate is silts. The riparian corridor consists of maintained ROW and forest.
- **GW_S08** is a perennial UNT to Swatara Creek, which flows west to east across TAR 1.4 through a metal culvert. GW_S08 was approximately 7 feet wide at the OHWM and contained approximately 3 inches of water within its channel at the time of survey. The primary substrate is silts. The riparian corridor consists of forest.
- **GW_S06** is a perennial stream (Swatara Creek second/eastern crossing) that flows through the existing and maintained ROW and extends past the forested northern and southern portions of the environmental study corridor. GW_S06 was greater than 50 feet wide at the OHWM and contained approximately 36 inches of water at the time of survey. The primary substrate is cobble. The riparian corridor is composed of forest.
- **GW_S09** is a perennial UNT to Swatara Creek, which flows southeast to northwest within TAR environmental study corridor. A bridge was recently installed allowing vehicle crossing. GW_S09 was approximately 6 feet wide at OHWM and contained approximately 6 inches of water within its channel at the time of survey. The primary substrate is gravel. The riparian corridor consists of a hedgerow within an agricultural field.

Grantville East Loop

Field investigations identified 18 (three ephemeral, nine intermittent, and six perennial) waterbody segments (GE_S01 through GE_S18) and one pond (GE_P01) within the environmental study corridor of the Grantville East Loop. None of these identified waterbody segments is associated with proposed access roads. The following descriptions of the perennial streams are given as they occur along the Project segment from west to east. Additional information on intermittent and ephemeral streams can be found in Table 2.2-1 and the Grantville West and East Loops WDR found in Appendix I-4.

The following six perennial streams were identified within the environmental study corridor:

- **GE_S03** is a perennial UNT to Little Swatara Creek, which flows from southwest to northeast across the existing and maintained ROW and the forested southern portion of the environmental study corridor. GE_S03 was approximately 12 feet across at the OHWM and contained approximately 18 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of ROW and forest. GE_S03 was observed to have sloughing banks.
- **GE_S15** is a perennial UNT to Little Swatara Creek, which flows from southeast to northwest across the forested northern and southern portions of the environmental study corridor, as well as the existing and maintained ROW. GE_S15 was approximately 15 feet wide at the OHWM and contained approximately 24 inches of water within its channel at the time of survey. The primary substrate is silts. The riparian corridor is composed of maintained ROW and forest. GE_S15 was observed to have sloughing banks at the time of survey.
- **GE_S02** is a perennial UNT to Little Swatara Creek, which flows from south to north across the existing and maintained ROW and the non-forested southern portion of the environmental study corridor. GE_S02 was approximately 9 feet wide at OHWM and contained approximately 24 inches of water in its channel at the time of survey. The primary substrate is silts. The riparian corridor consists of ROW and open field.
- **GE_S09** is a perennial UNT to Little Swatara Creek that flows southeast to northwest through the existing and maintained ROW and the forested northern and southern portions of the environmental study corridor. GE_S09 was approximately 15 feet wide at the OHWM and contained approximately 24 inches of water within its channel at the time of survey. The primary substrate is cobble. The riparian corridor consists of maintained ROW and forest. The feature has undercut banks.
- **GE_S16** is a perennial UNT to Little Swatara Creek that flows northeast to southwest through the northern, forested hedgerow portion of the environmental study corridor. GE_S16 was approximately 4 feet wide at the OHWM and contained approximately 4 inches of water within the channel at the time of survey. The primary substrate is silts. The riparian corridor consists of forested hedgerow.
- **GE_S14** is a perennial UNT to Little Swatara Creek, which flows from south to north through the forested northern portion of the environmental study corridor, existing, maintained ROW, and southern forested portion of the environmental study corridor. GE_S14 was approximately 8 feet wide at the OHWM and contained approximately 6 inches of water at the time of survey. The primary substrate is cobble. The riparian corridor consists of forest. GE_S14 showed signs of sloughing banks at the time of survey.

Bernville Loop

Field investigations identified five (one ephemeral, two intermittent, and two perennial) waterbody segments (B_S01 to B_S04 and B_S06) and one pond (B_P01) within the environmental study corridor of the Bernville Loop. Of these identified waterbody segments, one (B_S06) is associated with proposed access road. The following descriptions of the perennial streams are given as they occur along the Project segment from west to east. Additional information on intermittent and ephemeral streams can be found in Table 2.2-1 and the Bernville Loop WDR found in Appendix I-5.

The following two perennial streams were identified within the environmental study corridor:

- **B_S01** is a perennial reach of the Schuylkill River, which flows north to south across the ROW and forested southern portion of the environmental study corridor. The stream enters the environmental survey corridor near MP 0.2. The stream was greater than 50 feet wide at the OHWM and contained greater than 36 inches of water at the time of survey. The primary substrate is cobble and the riparian corridor consists of maintained ROW and forest.
- **B_S03** is a perennial reach of the Laurel Run, which flows northeast to southwest across the forested northern portion of the environmental study corridor, as well as the maintained and existing ROW. The stream enters the environmental survey corridor near MP 4.6. The stream was greater than 11 feet wide at the OHWM and contained approximately 12 inches of water at the time of survey. The primary substrate is cobble and the riparian corridor consists of maintained ROW and forest.

Uniontown Compressor Station

Field investigations identified five ephemeral waterbody segments (UT_S01, UT_S02, and UT_S04 to UT_S06) within the environmental study area of the Uniontown Compressor Station. Of these identified waterbody segments, none is associated with proposed access roads. Additional information on the streams can be found in Table 2.2-1.

Delmont Compressor Station

Field investigations identified two (one intermittent, and one perennial) waterbody segments (Del_S10 and Del_S11) and one pond (Del_P01) within the environmental study area of the Delmont Compressor Station. Of these identified waterbody segments, none is associated with proposed access roads. Below is the description for the one perennial stream identified at the Project segment. Additional information on the streams can be found in Table 2.2-1.

- **Del_S10** is a perennial stream, Beaver Run, which flows south to north and is located in the western portion of the survey area outside of the compressor station fence. The stream was approximately 2 feet wide at the OHWM and contained approximately 1 inch of water at the time of survey. The primary substrate is silt and the riparian corridor consists of forest.

Armagh Compressor Station

Field investigations identified two ephemeral waterbody segments (Arm_S01 and Arm_S02) within the environmental study area of the Armagh Compressor Station. Of these identified waterbody segments, none is associated with proposed access roads. Additional information on the streams can be found in Table 2.2-1.

Entriken Compressor Station

Field investigations identified six (five ephemeral and one intermittent) waterbody segments (Ent_S04 through Ent_S07, Ent_S07B, and Ent_S08) within the environmental study area of the Entriken Compressor Station. Of these identified waterbody segments, none is associated with proposed access roads. Additional information on the streams can be found in Table 2.2-1.

National Pike Wareyard

Field investigations identified two (two ephemeral) waterbody segments (H_S26 and H_S27) and three ponds (H_P04 through H_P06) within the environmental study area of the National Pike Wareyard. Of these identified waterbody segments, none is associated with proposed access roads. Additional information on the waterbodies can be found in Table 2.2-1.

Highway 119 Wareyard

No waterbodies were identified within the Highway 119 Wareyard.

Flea Market Wareyard

Field investigations identified five (two ephemeral and three intermittent) waterbody segments (FMW_S01 to FMW_S05) and one pond (FMW_P01) within the environmental study area of the Flea Market Wareyard. No perennial streams were identified and additional information on intermittent and ephemeral streams can be found in Table 2.2-1 and the Perulack Loops WDR found in Appendix I-2.

Stone Quarry Wareyard

No waterbodies were identified within the Stone Quarry Wareyard.

Bottom Road Wareyard

No waterbodies were identified within the Bottom Road Wareyard.

Highway 22-1 Wareyard

Field investigations identified one pond (HWY22_P02) within the environmental study area of the Highway 22-1 Wareyard. Additional information on the pond can be found in Table 2.2-1.

Highway 22-2 Wareyard

Field investigations identified one pond (HWY22_P01) within the environmental study area of the Highway 22-2 Wareyard. Additional information on the pond can be found in Table 2.2-1.

Highway 61 Wareyard

Field investigations identified one ephemeral waterbody (B_S05) within the environmental study area of the Highway 61 Wareyard. No perennial streams were identified and additional information on the ephemeral stream can be found in Table 2.2-1 and the Bernville Loops WDR found in Appendix I-5.

Doughten Road Wareyard

No waterbodies were identified within the Doughten Road Wareyard.

Prescott Drive Wareyard

No waterbodies were identified within the Prescott Drive Wareyard.

Bi-Directional Flow Facilities

Field investigations identified 50 (35 ephemeral, 4 intermittent, and 11 perennial) waterbody segments within the environmental study areas of the bi-directional flow facilities surveyed in Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee, Alabama, and Mississippi. The following descriptions of the perennial streams are given as they occur along the bi-directional flow facilities from north to south. Additional information on intermittent and ephemeral streams can be found in Table 2.2-2.

The following 11 perennial streams were identified within the environmental study areas of bi-directional flow facilities:

- **Holbrook Compressor Station: HB_S03** is a UNT to North Fork of Dunkard Fork, which flows south to north along roads within the facility. The stream was approximately 7 feet wide at the OHWM and contained approximately 1 inch of water in its channel at the time of the survey. The primary substrate is cobble and the riparian corridor consists of maintained land and scrub shrub.

- **Holbrook Compressor Station: HB_S05** is a perennial stream, North Fork of Dunkard Fork, which flows north to south outside of the gated portion of the Holbrook Compressor Station. The stream was approximately 50 feet wide at the OHWM and contained approximately 36 inches of water in its channel at the time of the survey. The primary substrate is muck and the riparian corridor consists of maintained ROW and forest.

- **Berne Compressor Station: BE_S08** is a perennial stream, Death Run, which flows north to south along the eastern boundary of the Berne Compressor Station. The stream was approximately 12 feet wide at the OHWM and contained approximately 12 inches of water in its channel at the time of the survey. The primary substrate is bedrock and the riparian corridor consists of forest.

- **Bern-Holbrook Launcher and Receiver (L&R): BE-HB-L&R_S04** is a perennial stream, Big Run, which flows east to west just north of the Bernville-Holbrook L&R facility; outside of the survey area. The stream was approximately 20 feet wide at the OHWM and contained approximately 2 inches of water in its channel at the time of the survey. The primary substrate is cobble and the riparian corridor consists of forest.

- **Wheelersburg-Athens L&R: WB-At-L&R_S01** is a perennial stream, Sisson Run, which flows north to south, west of the Wheelersburg-Athens L&R facility. The stream was approximately 20 feet wide at the OHWM and contained approximately 5 inches of water in its channel at the time of the survey. The primary substrate is muck and the riparian corridor consists of maintained ROW.

- **Summerfield Compressor Station: Sum_S01** is a perennial stream, Glady Run, which flows south to north along the southeastern portion of the Summerfield Compressor Station. The stream is approximately 3 feet wide at the OHWM and contained approximately 1 inch of water in its channel at the time of the survey. The primary substrate is silt and the riparian corridor consists of open field.

- **Barton-Mt. Pleasant L&R: Bar-MtPl_L&R_S01** is a perennial stream, Little Wolf Creek, which flows east to west underneath the gravel access road to the Barton-Mt. Pleasant L&R facility. The stream was approximately 12 feet wide at the OHWM and contained approximately 7 inches of water in its channel at the time of the survey. The primary substrate is gravel and the riparian corridor consists of maintained ROW and forest.

- **Mt. Pleasant-Gladeville L&R: MtPl-Glad_L&R_S03** is a perennial UNT to Rocky Fork Creek, which flows east to west underneath the Access Road to the Mt. Pleasant-Gladeville L&R facility. The stream was approximately 25 feet wide at the OHWM and contained approximately 6 inches of water in its channel at the time of the survey. The primary substrate is gravel and the riparian corridor consists of maintained ROW.

- **Egypt-Barton L&R: Egy_Bar_L&R_S01** is a perennial stream, Lick Skillet Creek, which flows north to south under the access road to Egypt-Barton L&R facility through a 60-inch

metal culvert. The stream is approximately 10 feet wide at the OHWM and contained greater than 36 inches of water in its channel at the time of the survey. The primary substrate is sand and the riparian corridor consists of maintained ROW and forest.

- **Kosciusko Pipeline Crossover: Kos_S03** is a perennial UNT to Little Conehoma Creek that flows generally east to west, extending outside of the survey area, and is located north of the existing Kosciusko Compressor Station and southeast of the existing ROW. KOS_S03 is approximately 15 feet wide at TOB, and the TOB depth was approximately 2 feet. Portions of the stream banks contained riprap and articulated concrete mats.
- **Kosciusko Pipeline Crossover: Kos_S05** is a perennial UNT to Little Conehoma Creek that flows generally north to south and is located northwest of the Kosciusko Compressor Station. KOS_S05 was approximately 3 feet wide at TOB, and the TOB depth was approximately 3 feet.

A summary of all of the waterbodies identified in association with the TEAM 2014 Project can be found in Table 2.2-3.

2.2.2 Contaminated Sediments and Water

To identify any waterbody crossings that may have a potential for contaminated waters or sediments, FirstSearch conducted a comprehensive file search of Federal and state databases and related information within the Project's study area. A summary of the 34 known sites that are listed in specified Federal and state regulatory databases and are located within 1 mile of the Project is provided in Table 2.2-4. All sites identified are either down-gradient of any Project-related construction or have never had issues of significant non-compliance. For this reason, none of the sites identified are anticipated to have an adverse impact on the Project.

At the bi-directional flow facilities all activities will take place entirely within Texas Eastern's ROW or within the boundaries of existing facility sites, with one exception, a pipeline crossover installation located on the existing pipeline ROW north of the Kosciusko Compressor Station in Attala County, Mississippi. At the Kosciusko Pipeline Crossover, workspace for staging and a new permanent access road will be required outside of previously disturbed areas. A FirstSearch report identified no active and geocoded sites within 1 mile of the facility. If any additional facility boundaries must be extended or additional workspace is deemed necessary, FirstSearch reports will be completed to identify any contaminated waters or sediments within a 1-mile radius of the site.

Texas Eastern has developed a SPCC (Appendix H) that will be implemented for all of its facilities.

2.2.3 Public Watershed Areas

The PADEP Bureau of Watershed Management was contacted for information regarding public watershed areas. In Pennsylvania, groundwater protection areas are typically contained within a 0.5-mile buffer around any active wellheads (Bowling, 2012, personal communication). Table 2.1-1 lists all wells located within 200 feet of the Project. Section 2.1-3 describes Texas Eastern's plans to minimize and mitigate groundwater impacts.

Using PADEP's eMapPA, a buffer search was run to identify any public surface water intake areas within 0.25 mile of the TEAM 2014 Project. The search identified no surface water intake areas so it is unlikely any surface water protection areas exist within the same radius.

2.2.4 Sensitive Surface Waters

The National Marine Fisheries Service (NMFS) was consulted to identify any Essential Fish Habitat (EFH) within the environmental study area of the Project (May, 2012, personal communication). EFHs are areas delineated by the NMFS, which provide suitable marine fishery habitat for Federally managed marine and anadromous fish species.

Pennsylvania Code (PA Code) 93 and emapPA were used to identify the state fishery designation for each waterbody. Streams identified in association with this Project have been designated as warm water fisheries (WWF), cold water fisheries (CWF), high quality (HQ), and migratory fisheries (MF) (PA Code, 2009). Though the PADEP does not outline construction limitations, FERC states that construction must occur between June 1 and November 30 for WWFs and between June 1 and September 30 for CWFs (FERC, 2003a). The PADEP protects HQ waters by limiting any point source or nonpoint source discharges into to the water, thereby preventing any risk of quality degradation.

The Pennsylvania Fish and Boat Commission (PFBC) classifies some streams as Approved Trout Waters or Wild Trout Waters. Approved Trout Waters are stocked with trout and significant sections are open to the public for fishing during the extended season. The waters are closed to all fishing from March 1 until trout season opening day as determined by PFBC. Construction blackout dates from March 1 to June 15 apply to all direct impacts to approved trout waters unless specified otherwise by the PFBC. The approved trout water timing restrictions only apply to the stocked portions of the waterbody and any unnamed tributaries within 0.5 mile of the stocked portions.

Waters classified as Wild Trout Waters are intended to protect and promote native trout fisheries. Construction blackout dates from October 1 to December 31 apply to the entire reach of any stream within the designated watershed unless specified otherwise by the PFBC.

Holbrook Loop

No EFH was identified within the environmental study corridor of the Holbrook Loop (May, 2012, personal communication).

According to PA Code 93, there are no HQ or exceptional value waters within the Holbrook Loop. All 30 of the identified waterbody segments within the environmental study corridor of the Holbrook Loop (H_S01 through H_S21, H_S23, H_S24, H_S24A, H_S24B, H_S24C, H_S25, and H_S30 through H_S32) are classified as WWFs (PA Code, 2009).

For this pipeline segment, the PFBC classifies 20 streams (H_S01 to H_S12, H_S15, H_S16, H_S23, H_S24, H_S24A, H_S24B, H_S24C, H_S25) as Approved Trout Waters. None of the waters identified within the environmental study corridor is classified as a Wild Trout Water by the PFBC (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, Dunlap Creek and Redstone Creek, as well as several of their tributaries are classified as impaired waterbodies (PADEP, 2010b). Dunlap Creek and its tributaries have impaired aquatic life due to siltation and erosion from small residential runoff, grazing related agriculture, construction, and derelict land. Redstone Creek has impaired aquatic life due to a flux of metals introduced to the waterbodies from abandoned mine drainage. The Project's temporary impacts on these waterbodies will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways are anticipated to return to pre-construction conditions.

Perulack West Loop

No EFH was identified within the environmental study corridor of the Perulack West Loop (May, 2012, personal communication).

According to PA Code 93, the nine UNTs to Bowers Run (PW_S01 to PW_S10) identified within Perulack West Loop's environmental study corridor are classified as HQ-CWF-MF waters; the two UNTs to Shermans Creek identified within Perulack West Loop's environmental study corridor are classified as HQ-CWFs (PA Code, 2009).

For this pipeline segment, PFBC classifies none of the waters identified within the environmental study corridor as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Perulack West Loop is located approximately 1.0 mile from the segment (PADEP, 2010a and PADEP 2010b). Therefore, no direct impacts on impaired waterbodies are expected.

Perulack East Loop

No EFH was identified within the environmental study corridor of the Perulack East Loop (May, 2012, personal communication).

According to PA Code 93, the two UNTs connected to Cisna Run (PE_S01 and PE_S02), which were identified within the environmental study corridor, are classified as HQ-CWF-MF. Bixler Run and its five UNTs identified within the environmental study corridor (PE_S03 to PE_S06, PE_S08, and PE_S09) are classified as CWF-MF. The one UNT to Muddy Run (PE_S11) is classified as a WWF-MF (PA Code, 2009).

For this pipeline segment, the PFBC classifies Bixler Run and its six UNTs as Approved Trout Waters. None of the waters identified within the environmental study corridor is classified as a Wild Trout Water by the PFBC (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbodies to the Perulack East Loop are Cisna Run, as well as one of its unnamed tributaries, located 0.5 and 0.1 miles west of the loop respectively. The streams have impaired aquatic life due to siltation and nutrient loading from grazing related agricultural practices. The Project's temporary impacts on these waterbodies will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways are anticipated to return to pre-construction conditions.

Shermans Dale Loop

No EFH was identified within the environmental study corridor of the Shermans Dale Loop (May, 2012, personal communication).

According to PA Code 93, Stony Creek, as well the 13 UNTs connected to it, which were identified within the environmental study corridor of the Shermans Dale Loop (SD_S01 to SD_S13 and SD_S56) are classified as CWF-MF. The two Fishing Creek crossings, as well the 29 UNTs connected to it, which were identified within the environmental study corridor of the Shermans Dale Loop (SD_S14 to SD_S19, SD_S21 to SD_S34, SD_S39, SD_S40, SD_S47 to SD_S51, SD_S53 to SD_S55, and SD_S57) are classified as WWF-MF.

For this pipeline segment, the PFBC classifies 14 waterbodies (SD_S01 to SD_S13 and SD_S56) as Approved Trout Waters. None of the waters identified within the environmental study corridor is classified as a wild trout water by the PFBC (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Shermans Dale Loop is Paxton Creek, located over 1.5 miles south of the Project (PADEP, 2010b). Therefore, no direct impacts on impaired waterbodies are expected.

Grantville West Loop

No EFH was identified within the environmental study corridor of the Grantville West Loop (May, 2012, personal communication).

According to PA Code 93, the two Swatara Creek crossings, as well as the nine UNTs to Swatara Creek (GW_S01 to GW_S06, GW_S08, GW_S09, and GW_S11 to GW_S13) identified within Grantville West Loop's environmental study corridor are classified as WWF-MF waters (PA Code, 2009).

For this pipeline segment, PFBC classifies none of the waters identified within the environmental study corridor as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbodies to the Grantville West Loop are two UNTs to Swatara Creek, one located approximately 0.3 miles north of the Project near MP 0.5 and one approximately 0.6 mile south of the Project near MP 2.0. The streams have impaired aquatic life due to siltation, nutrient loading, and flow alterations from crop related agricultural practices. The Project's temporary impacts on these waterbodies will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Grantville East Loop

No EFH was identified within the environmental study corridor of the Grantville East Loop (May, 2012, personal communication).

According to PA Code 93, all 18 UNTs to Little Swatara Creek (GE_S01 to GE_S18) identified within Grantville East Loop's environmental study corridor are classified as WWF-MF waters (PA Code, 2009).

For this pipeline segment, PFBC classifies none of the waters identified within the environmental study corridor as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the 2*010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbodies to the Grantville East Loop are two UNTs to Little Swatara Creek, one which crosses the Project at MP 0.3 and another 0.5 mile from MP 3.8. The stream has impaired aquatic life due to nutrient loading from agricultural practices. The Project's temporary impacts on these waterbodies will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Bernville Loop

No EFH was identified within the environmental study corridor of the Bernville Loop (May, 2012, personal communication).

According to PA Code 93, the Schuylkill River and its UNTs (B_S01, B_S02, B_S04, and B_S06) identified within Bernville Loop's environmental study corridor are classified as WWF-MF waters. Additionally, Laurel Run (B_S03), which was identified within the environmental study corridor, is classified as CWF-MF (PA Code, 2009).

For this pipeline segment, PFBC classifies none of the waters identified within the environmental study corridor as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbodies to the Bernville Loop are as follows (PADEP, 2010b):

- Laurel Run, which is only tentatively impaired and located 0.3 miles south of the Project near MP 4.7:
- An UNT to Willow Creek, which is 0.4 miles from the Project around MP 4.1; and
- Maiden Creek, which is located approximately 0.2 miles from the Project around MP 0.2.

Laurel Run has impaired aquatic life due to siltation and habitat alterations caused by road runoff. The Project's temporary impacts on this waterbody will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

For this pipeline segment, PFBC classifies none of the waters crossed as approved trout waters or wild trout waters (PFBC, 2010b).

Uniontown Compressor Station

According to PA Code 93, all five UNTs to Cove Run (UT_S01, UT_S02, and UT_S04 to UT_S06) that were identified within the Uniontown Compressor Station environmental study area are classified as WWF waters (PA Code, 2009).

For this compressor station, PFBC classifies none of the waters identified within the environmental study area as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Uniontown Compressor Station is a UNT to Redstone Creek located approximately 0.4 miles downstream from the Project. The stream has impaired aquatic life due to organic enrichment and low dissolved oxygen caused by urban runoff from storm sewers; elevated metal levels due to abandoned mine drainage; and siltation due to road runoff.

Delmont Compressor Station

According to PA Code 93, Beaver Run, as well as its one UNT (Del_S10 and Del_S11) identified within Delmont Compressor Station's environmental study area are classified as HQ-CWF waters (PA Code, 2009).

For this compressor station, PFBC classifies none of the waters identified within the environmental study area as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the 2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, the nearest impaired waterbody to the Delmont Compressor Station is Beaver Run, which is adjacent to the station. Beaver Run, as well as its tributaries have impaired aquatic life due to siltation caused by grazing related agriculture. The Project's temporary impacts on these waterbodies will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Armagh Compressor Station

According to PA Code 93, both UNTs to East Branch Richards Run (Arm_S01 and Arm_S02) that were identified within the Armagh Compressor Station environmental study area, are classified as CWF waters (PA Code, 2009).

For this compressor station, PFBC classifies none of the waters identified within the environmental study area as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Armagh Compressor Station is a portion of Richards Run, located approximately 1.7 miles to the Project. The stream has impaired aquatic life due to elevated metal levels from abandoned mine drainage.

Entriken Compressor Station

According to PA Code 93, all six UNTs to Great Trough Creek (Ent_S04 to Ent_S07, Ent_S07B, and Ent_S08) that were identified within the Entriken Compressor Station environmental study area, are classified as Trout Stocked Fishery (TSF)-MF waters (PA Code, 2009).

For this compressor station, PFBC classifies none of the waters identified as within the environmental study area as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Entriken Compressor Station is Little Trough Creek, located over 3.0 miles away and upstream of the Project (PADEP, 2010b). Therefore, no direct impacts on impaired waterbodies are expected.

National Pike Wareyard

According to PA Code 93, both UNTs to Fourmile Run (H_S26 and H_S27) that were identified within National Pike Wareyard environmental study area are classified as WWF waters (PA Code, 2009).

For this wareyard, PFBC classifies none of the waters identified within the environmental study area as Approved Trout Waters or Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the National Pike Wareyard is Dunlap Creek, located approximately 2.0 miles from the Project. The stream has impaired aquatic life due to organic enrichment and low dissolved oxygen levels caused by small residential runoff and an upstream impoundment, and elevated metal levels from abandoned mine drainage. The Project's temporary

impacts on this waterbody will be minimized through the use of proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Highway 119 Wareyard

No sensitive surface waters were identified within the environmental study area of the Highway 119 Wareyard because no waterbodies were delineated within the limits of the facility.

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Highway 119 Wareyard is Gist Run. The waterbody, located 1.1 miles downstream, has impaired aquatic life due to siltation caused by small residential run off. The Project's temporary impacts on these waterbodies will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Flea Market Wareyard

According to PA Code 93, the five UNTs to Tuscarora Creek (FMW_S01 to FMW_S05) identified at the Flea Market Wareyard are classified as CWF-MF (PA Code, 2009).

For this wareyard, PFBC classifies five streams (FMS_S01 to FMW_S05) as Approved Trout Waters. None of the streams are identified as Wild Trout Waters (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Flea Market Wareyard is Dougherty Run, located 4.0 miles away from the wareyard (PADEP, 2010b). The stream has impaired aquatic life due to siltation caused by crop-related agriculture.

Stone Quarry Wareyard

No sensitive surface waters were identified within the environmental study area of the Stone Quarry Wareyard because no waterbodies were delineated within the limits of the facility.

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbodies to the Stone Quarry Wareyard is Dry Run, located 0.5 mile away from the wareyard (PADEP, 2010b). The stream has impaired aquatic life due to siltation caused by crop and grazing related agriculture.

Bottom Road Wareyard

No sensitive surface waters were identified within the environmental study area of the Bottom Road Wareyard because no waterbodies were delineated within the limits of the facility.

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Bottom Road Wareyard is Laurel Run, located 3.8 miles away from the wareyard (PADEP, 2010b). The stream is impaired due to the presence of metals due to atmospheric deposition.

Highway 22-1 Wareyard

One pond (HWY22_P02) was identified within the environmental study area of the Highway 22-1 Wareyard. The feature holds no special classification.

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Highway 22-1 Wareyard is Earlakill Run, located approximately 0.1 miles from the Project. The stream has impaired aquatic life elevated nutrient levels caused by agriculture. The Project's temporary impacts on this waterbody will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Highway 22-2 Wareyard

One pond (HWY22 _P01) was identified within the environmental study area of the Highway 22-2 Wareyard. The feature holds no special classification.

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Highway 22-2 Wareyard is Earlakill Run, located approximately 100 feet from the Project. The stream has impaired aquatic life elevated nutrient levels caused by agriculture. The Project's temporary impacts on this waterbody will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Highway 61 Wareyard

According to PA Code 93, the UNT to Willow Creek (B_S05) that was identified within Highway 61 Wareyard environmental study area is classified as a WWF, MF water (PA Code, 2009).

The PFBC recognizes B_S05 as an Approved Trout Water and a tributary to a Class A Wild Trout Stream, Willow Creek. It is not recognized as a Wild Trout Stream (PFBC, 2012a and 2012b).

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Highway 61 Wareyard is Willow Creek, located less than 100 feet from the Project. The stream has impaired aquatic life due to flow alterations from elevated nutrient levels caused by industrial point source impacts, as well as an impaired recreational status caused by unknown pathogens. The Project's temporary impacts on this waterbody will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Doughten Road Wareyard

No sensitive surface waters were identified within the environmental study area of the Doughten Road Wareyard because no waterbodies were delineated within the limits of the facility.

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Bottom Road Wareyard is Hogestown Run, located 0.8 miles away from the wareyard (PADEP, 2010b). The stream is impaired due to an increase in siltation and organic enrichment from agriculture and urban runoff leading do a low dissolved oxygen concentration, as well as the presence of pathogens from an unknown source.

Prescott Drive Wareyard

No sensitive surface waters were identified within the environmental study area of the Prescott Drive Wareyard because no waterbodies were delineated within the limits of the facility.

According to the *2010 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*, the nearest impaired waterbody to the Prescott Drive Wareyard is a UNT to Tulpehocken Creek, located 0.2 miles away from the wareyard (PADEP, 2010b). The stream is impaired due to an increased siltation from both agriculture and urban runoff. The Project's temporary impacts on this waterbody will be minimized by using proper erosion and sedimentation controls. After restoration, these waterways would be anticipated to return to pre-construction conditions.

Bi-Directional Flow Facilities

As previously discussed, modifications and maintenance of existing facilities are proposed within existing compressor station sites, meter station sites, and pig launcher and receiver sites along Texas Eastern's pipeline system between Pennsylvania and Mississippi to accommodate bi-directional flow of natural gas. All activities will take place entirely within Texas Eastern's ROW and within the boundaries existing facility sites, with one exception, a pipeline crossover installation located on the existing pipeline ROW north of the Kosciusko Compressor Station in Attala County, Mississippi. At the Kosciusko Pipeline Crossover, workspace for staging and a new permanent access road will be required outside of previously disturbed areas.

The tributaries delineated at the Kosciusko Pipeline Crossover do not meet any sensitive surface water classifications. Based on conversations with the NMFS, the Project will have no direct impact on living marine resources (Thompson, 2013, personal communication). In addition, Conehoma Creek, which the delineated tributaries flow to, is not considered a scenic river under the Mississippi Department of Wildlife, Fisheries, and Parks (Rieke and Sanderson, 2013, personal communication). Conehoma Creek is also not an impaired waterbody based on the Mississippi Department of Environmental Quality 303(d) impaired waterbodies list (2012).

2.2.5 Hydrostatic Test Water

Hydrostatic testing verifies the integrity of pipeline segments. Pipeline integrity is tested by capping the pipeline segments with test manifolds and filling the capped segments with water. Once installed, hydrostatic testing of the pipe will be performed in multiple segments.

Hydrostatic test water withdrawals and discharges will comply with Texas Eastern's Erosion and Sediment Control Plan (E&SCP) (Appendix E) and Federal and state requirements. The pipeline segments and associated facilities will be filled with water and typically pressurized to one and a half times higher than the maximum pressure under which the pipeline will be operated. The water will be maintained at the prescribed pressure for a minimum of 8 hours to verify the strength and integrity of the new facilities. Hydrostatic testing will be conducted in a manner that meets or exceeds the U.S. Department of Transportation's (USDOT) *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards* in 49 Code of Federal Regulations (CFR) 192 (USDOT, 2012).

Environmental impacts from withdrawal and discharge of hydrostatic test water will be minimized by using the measures outlined in Texas Eastern's E&SCP as follows:

- Locate hydrostatic test manifolds outside of wetlands and riparian areas, as practical;
- Withdraw from and discharge to water sources in compliance with appropriate agency requirements that consider the protection of fishery resources on a case-by-case basis;
- Comply with all appropriate permit requirements;
- Screen the intake to minimize entrainment of fish;

- Maintain adequate flow rates to protect aquatic life and provide for all waterbody uses and downstream withdrawals of water by existing users;
- Anchor the discharge pipe for safety;
- Discharge test water against a splash plate or other energy-dissipating device to a suitable receiving body of water, across a well-vegetated area, or filtered through a filter bag or erosion control barriers; and
- Control the rate of discharge to prevent flooding or erosion.

Texas Eastern conducted surveys to identify potential hydrostatic test water withdrawal and discharge sites for the proposed Project segments. Table 2.2-6 presents a preliminary list of potential hydrostatic test water withdrawal points, amounts, and discharge locations. Hydrostatic testing procedures will occur for all pipeline segments and compressor stations. Preliminary calculations show that approximately 9,023,308 gallons of water will be needed for hydrostatic testing.

Texas Eastern will acquire applicable hydrostatic testing withdrawal and discharge permits at the Federal, state, and local levels, where appropriate. It is anticipated that permit applications will be filed by March 2013.

2.2.6 Construction Permits

Texas Eastern will acquire applicable construction permits at the Federal, state, and local levels, including applicable water quality certifications and encroachment permits for wetland impacts, where appropriate. It is anticipated that permit applications will be filed by March 2013.

Applicable permits and approvals associated with the proposed Project are listed in Table 1.5-1 of Resource Report 1.

2.2.7 Waterbody Construction and Mitigation Procedures

Construction at waterbodies will be conducted using two principal crossing methods, a dry crossing and a modified dry crossing. The proposed crossing method for each waterbody is presented in Table 2.2-1. Texas Eastern selects the construction technique for a particular waterbody based on the crossing width, stream flow, construction limitations such as limited workspace or steep slopes, the Federal and state designation of the waterbody and associated resources, and the specifications outlined in the FERC *Procedures* (FERC, 2003a). Variances from the FERC *Procedures* (FERC, 2003a) are listed in Table 2.2-7. Dry crossings consist of four potential techniques: flumed crossing, dam and pump crossing, coffer dam crossing, and modified dry crossing. Wet crossings, which may also be called open cut crossings, are not proposed for use on the Project at this time.

The typical dry crossings use erosion controls with a temporary sandbag dam to divert the water away from construction activities as described in the E&SCP in Appendix E. The modified dry crossing technique consists of typical dry crossing techniques with a flume pipe maintaining water quality after trenching activities are completed and until the lowering-in crew installs the pipe.

Texas Eastern has consulted with the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), and other Federal, state, and county agencies to determine the most appropriate crossing techniques for each stream. Proper timing, staging and erosion and sediment controls will be implemented prior to any stream construction. Pre-blasting may be required at some crossings in order to loosen rock below streambeds to facilitate the installation of the

pipeline. Pre-blasting would involve minimal impacts to the streambed and aquatic resources. Controlled charges would be placed adjacent to and below streambeds without disturbing the stream channel. Mobile aquatic resources would be manually forced from the blasting area immediately prior to blasting. The blasting would be designed to create minimal above ground disturbance and would usually be limited to just a minor shaking of the streambed. Proper permits would be obtained prior to any blasting. A temporary equipment bridge may be installed across a waterbody to provide a means for construction equipment to cross the stream while minimizing impacts to the channel bottom or banks. Waterbodies crossed by temporary access roads will be bridged or are already bridged for equipment crossings. Texas Eastern's E&SCP (Appendix E) was prepared to minimize erosion of disturbed soils and transportation of sediments off the ROW and into sensitive resources during construction activities. The procedures in the E&SCP are designed to accommodate varying field conditions while maintaining standards for protection of resources. Section 5.2.5 of the E&SCP describes the various waterbody-crossing techniques. The E&SCP will be submitted to all permitting agencies for their review and comment.

All refueling activities and maintenance of equipment will be executed in accordance with Texas Eastern's E&SCP and SPCC Plan. Disposal of construction waste materials will follow local, state, and Federal regulations. Waste will be carried to approved public or private waste disposal sites. Hazardous waste materials, chemicals, fuels, and lubricating oils shall not be stored within 100 feet of any waterbody, wetland, or designated watershed area. In the event that this 100-foot setback cannot be fulfilled, storage will be consistent with the SPCC Plan (Appendix H).

Texas Eastern will not use chemicals for testing or drying the pipeline following the hydrostatic testing. All water will be systematically tested as specified in the state discharge permits and discharged at a controlled rate, using energy dissipation devices such as hay bale corrals, filter bags, or similar devices to prevent erosion, stream bank scour, suspension of sediments, and excessive stream flows. Section 3 of Texas Eastern's E&SCP provides additional detail on hydrostatic testing procedures.

2.3 Wetlands

Wetlands are transitional zones between terrestrial and aquatic environments. They are defined as areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. They include swamps, marshes, bogs, and similar areas.

After reviewing USFWS National Wetlands Inventory maps and completing a desktop Critical Issues Analysis, wetlands were identified during field surveys of an approximate 200-foor study corridor, conducted in summer and fall 2012. In some locations, the study corridor was extended where additional workspace was required beyond the 200-foot-wide environmental study corridor to accommodate necessary construction activities. In addition, the full acreage within potential pipeyards and wareyards, and a 25-foot-wide corridor along proposed temporary access roads and permanent access roads were surveyed to determine if resources were present in these areas. The wetland boundaries along the Project were field delineated using the 1987 USACE *Wetland Delineation Manual*. Each wetland location was surveyed in the field using a global positioning system unit, and identified with a specific number (i.e., initials of discharge and sequential numbers for each wetland crossing). Additionally, photos of each feature were taken, compiled into a photo log for each Project loop or facility, and included in each WDR (Appendix I). Wetland data include:

- Wetland type
- Hydrologic indicators

- Soil types
- Vegetative communities
- Total length crossed for each wetland
- Acreage of temporary impacts

In total, 110 PEM, 13 palustrine forested (PFO), and nine palustrine scrub shrub (PSS) wetlands were identified among the Project pipeline segments, compressor stations, wareyards, and bi-directional flow facilities. In some instances, features were identified as having multiple wetland types, and are represented within the totals based on their dominant wetland type. Detailed information for wetland features identified within the environmental study areas of the pipeline segments, compressor stations, and wareyards can be found in Table 2.3-1 and the WDRs found in Appendix I, while information for wetland features identified within the environmental study area of the bi-directional flow facilities can be found in Table 2.3-2. Table 2.3-3 contains a summary table of Project impacts to waterbodies and wetlands. The Project has been sited to avoid and minimize impacts to wetlands to the maximum extent practicable.

2.3.1 Existing Resources

The vegetation, soils, and hydrology of each wetland area crossed at the time of investigation are described in the WDRs (Appendix I). The wildlife and vegetation associated with the dominant wetland cover types crossed by the pipeline are described in Resource Report 3, Sections 3.2 and 3.3. Wetland areas that may support rare, threatened, or endangered plant or animal species are identified in Resource Report 3, Section 3.4. Information on the wetlands identified during field surveys can be found in Table 2.3-1 and in the WDR written for each Project Segment found in Appendix I

Holbrook Loop

Field investigations identified 19 wetlands (H_W01 through H_W10, H_W12, H_W13, and H_W19 to H_W25) within the environmental study corridor of the Holbrook Loop. Of these wetlands, all 19 were PEM. Additional information on wetlands can be found in Table 2.3-1 and the Holbrook Loop WDR found in Appendix I-1.

Perulack West Loop

Field investigations identified nine wetlands (PW_W01 through PW_W09) within the environmental study corridor of the Perulack West Loop. Of these wetlands, six are PEM, two are PSS, and one is PFO. Additional information on wetlands can be found in Table 2.3-1 and the Perulack Loops WDR found in Appendix I-2.

Perulack East Loop

Field investigations identified 10 wetlands (PE_W01 through PE_W10) within the environmental study corridor of the Perulack East Loop. Of these wetlands, all are PEM. Additional information on wetlands can be found in Table 2.3-1 and the Perulack Loops WDR found in Appendix I-2.

Shermans Dale Loop

Field investigations identified 30 wetlands (SD_W01 through SD_W24, SD_W26, SD_W27, and SD_W29 to SD_W32) within the environmental study corridor of the Shermans Dale Loop portion of the Project. Of these wetlands, 26 are PEM, one is PSS, one is PFO and two are mixed PFO/PEM with PFO dominant. Additional information on wetlands can be found in Table 2.3-1 and the Shermans Dale Loop WDR found in Appendix I-3.

Grantville West Loop

Field investigations identified 12 wetlands (GW_W01 and GW_W12) within the environmental study corridor of the Grantville West Loop. Of these wetlands, nine are PEM and two are PFO, and one is mixed PFO/PEM/PSS with PFO dominant. Additional information on wetlands can be found in Table 2.3-1 and the Grantville Loops WDR found in Appendix I-4.

Grantville East Loop

Field investigations identified 13 wetlands (GE_W01 to GE_W13) within the environmental study corridor of the Grantville East Loop. Of these wetlands, six are PEM, three are PSS, two are mixed PFO/PEM with PFO dominant, one is mixed PEM/PFO with PEM dominant, and one is PFO/PEM/PSS with PFO dominant. Additional information on wetlands can be found in Table 2.3-1 and the Grantville Loops WDR found in Appendix I-4.

Bernville Loop

Field investigations identified three wetlands (B_W01 to B_W03) within the environmental study corridor of the Bernville Loop. Of these wetlands, all are PEM. Additional information on wetlands can be found in Table 2.3-1 and the Bernville Loop WDR found in Appendix I-5.

Uniontown Compressor Station

Field investigations identified two wetlands (UT_W01 and UT_W03) within the environmental study area of the Uniontown Compressor Station. Of these wetlands, one is PEM and one is PSS. Additional information on wetlands can be found in Table 2.3-1.

Delmont Compressor Station

Field investigations identified two PEM wetlands (Del_W01 and Del_W02) within the environmental study area of the Delmont Compressor Station. Additional information on wetlands can be found in Table 2.3-1.

Armagh Compressor Station

Field investigations identified one PEM wetland (Arm_W01) within the environmental study area of the Armagh Compressor Station. Additional information on wetlands can be found in Table 2.3-1.

Entriken Compressor Station

Field investigations identified one PEM wetland (Ent_W01) within the environmental study area of the Entriken Compressor Station. Additional information on wetlands can be found in Table 2.3-1.

National Pike Wareyard

Field investigations identified five PEM wetlands (H_W14 to H_W18) within the environmental study area of the National Pike Wareyard. Additional information on wetlands can be found in Table 2.3-1.

Highway 119 Wareyard

No wetland areas were identified within the environmental study area the proposed Highway 119 Wareyard.

Flea Market Wareyard

Field investigations identified three PEM wetlands (FMW_W01 to FMW_W03) within the proposed Flea Market Wareyard. Additional information on wetlands can be found in Table 2.3-1 and the Perulack Loops WDR found in Appendix I-2.

Stone Quarry Wareyard

No wetland areas were identified within the environmental study area the proposed Stone Quarry Road Wareyard.

Bottom Road Wareyard

Field investigations identified one PEM wetland (BRW_W010) within the proposed Bottom Road Wareyard. Additional information on wetlands can be found in Table 2.3-1 and the Perulack Loops WDR found in Appendix I-2.

Highway 22-1 Wareyard

Field investigations identified one PEM wetland (HWY22_W01) within the environmental study area of the Highway 22-1 Wareyard. Additional information on the wetland can be found in Table 2.3-1.

Highway 22-2 Wareyard

No wetland areas were identified within the environmental study area the proposed Highway 22-2 Wareyard.

Highway 61 Wareyard

No wetland areas were identified within the environmental study area the proposed Highway 61 Wareyard.

Doughten Road Wareyard

No wetland areas were identified within the environmental study area the proposed Doughten Road Wareyard.

Prescott Drive Wareyard

No wetland areas were identified within the environmental study area the proposed Prescott Drive Wareyard.

Bi-Directional Flow Facilities

Field investigations identified 20 wetlands within the environmental study areas of the bi-directional flow facilities surveyed in Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee, Alabama, and Mississippi. Of these wetlands, 15 are classified as PEM, two are classified as PSS, and three are classified as PFO. Additional information on wetlands can be found in Table 2.3-2.

2.3.2 Construction Impacts and Mitigation

Construction and restoration activities in wetland areas will be in accordance with Texas Eastern's E&SCP (Appendix E) unless Federal, state, or county agencies require an alternative method. The procedures described in the E&SCP have been designed based upon an integration

of guidelines and principles from FERC, USACE, USFWS, USDA, and the practical experience of Texas Eastern. Variances from the FERC *Procedures* are listed in Table 2.2-7.

In most cases, impacts to wetlands will only be associated with temporary impacts due to construction activities. As outlined in the E&SCP the use of timber mats, top soil segregation, and proper seeding techniques will result in a return of the wetland to pre-construction functions. Operation and permanent impacts will only be associated with areas where expanded ROWs will require vegetation maintenance in wetland areas. This periodic clearing of the vegetation is limited to a 10-foot-wide corridor centered on the new pipeline and the removal of trees over 15 feet tall within a 30-foot-wide corridor centered on the new pipeline. This maintenance activity is required to keep root systems of large woody vegetation from interfering with the pipeline, but will not cause the net loss of any wetland area.

The conversion of forested wetland to emergent or scrub-shrub wetland will occur on the Shermans Dale, Grantville West and Grantville East Loops. Texas Eastern will obtain permits as necessary from the USACE and state wetland management agencies for any temporary impacts and permanent conversion of wetlands.

2.3.3 Specialized Wetland Restoration

Forested Wetlands

Texas Eastern's approach to wetland mitigation and restoration involves a combination of: 1) impact minimization during construction, 2) substrate and hydrology restoration, and 3) vegetation establishment, involving natural succession processes as a key component. Texas Eastern believes that this approach will best minimize long-term impacts to forested wetlands and will facilitate the development of a forested wetland with a vegetation community composed of species best suited for the site and succession stage. Texas Eastern will comply with any Federal, state, or county agencies that require alternative methods.

During the construction phase, impacts to wetlands will be minimized by employing the wetland construction procedures specified in the E&SCP. In forested wetlands, Texas Eastern will minimize the amount of tree clearing to the maximum extent practical while still allowing for safe construction of the pipeline. Although Texas Eastern has requested a 75-foot construction ROW through all wetlands, where possible as determined by the Chief and Environmental Inspectors at the time of construction, selected trees along the edge of this corridor may be preserved to help minimize impacts. In forested and scrub-shrub wetlands, trees and brush will be cut at ground level, leaving the stumps and root systems intact. Tree stumps will be preserved to the maximum extent practical and removed only over the trench line and where the Environmental and Chief Inspectors determine that stumps present a safety hazard for construction. Stumps not requiring removal in the construction zone typically will be cut down to ground level, leaving some of the root collar and root system in place. Treating stumps and root systems in this manner will promote the potential for re-sprouting in some species, including red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus deltoides*), and willows (*Salix spp.*). During the restoration phase, segregated topsoil will be replaced over the trench line and wetland contours, and drainage patterns will be restored to as near original conditions as possible. Following restoration of the substrate, wetlands typically will be seeded with annual ryegrass at a rate of 40 pounds per acre, or with a seed mixture developed in consultation with the various state agencies, the USACE, and National Resource Conservation Service (NRCS).

Forest and shrub vegetation in forested wetlands will be re-established using natural succession processes. As required by the E&SCP, Texas Eastern will conduct post-construction monitoring

of wetlands affected by construction to assess the condition of vegetation and the success of restoration.

Riparian Areas

Texas Eastern will employ a similar combination of impact minimization and restoration methods to mitigate impacts to riparian areas and promote re-vegetation success. Texas Eastern will comply with any Federal, state, or county agencies that require alternative methods.

During the construction phase, efforts will be made to minimize clearing to the extent practicable while ensuring safe construction conditions. Based on an evaluation by the Chief and Environmental Inspectors, some selected trees at the edges of the nominal workspace, as indicated on the drawings, may be retained to help minimize impacts. Trees and brush that have to be removed will be cut at ground level, to the extent practicable, leaving stumps and root systems in place, thus potentially promoting re-sprouting. Stumps over the trench line and in the area of the equipment crossing will be removed.

Following installation of the pipeline, stream banks and riparian areas will be re-contoured and stabilized. Banks typically will be stabilized with an NRCS-approved (or other local conservation authority) stream bank conservation herbaceous mixture and erosion control fabric such as jute netting. Rock riprap may be used to stabilize particularly erosive or unstable areas at the approval of the state agencies and the USACE.

2.4 Cumulative Impacts

The anticipated cumulative impacts of the proposed Project on water use and quality will be addressed in the following section. The projected cumulative impacts will be based on impact assessment, input from Federal, state, and county agencies and public input received at open houses.

The Project has been sited to avoid or minimize impacts to water resources wherever possible. The Project will be co-located within, or parallel to, existing, previously disturbed, and maintained ROWs. The pipeline ROWs have been in active use since the 1940s. All work at the Compressor Stations will be done within the fence line of the existing facility. No water resources will be impacted at the proposed wareyards and access roads.

Temporary impacts to water resources during construction activities, including some necessary trench excavation through wetlands and waterways, spoil storage in wetland areas, and minor drops in local water tables during trench dewatering, would be minimized through the implementation of erosion and sedimentation control best management practices as outlined in the E&SCP (Appendix E). The reasonable and foreseeable future impacts arising from this Project would predominantly include operation and maintenance activities for the facilities. These activities would be performed with the same avoidance and minimization efforts as during construction of the Project and, again, would cause limited and temporary impacts to water resources.

Texas Eastern is in coordination with the applicable county planning commissions and other agencies to identify proposed development projects in the Project area. At this time, Texas Eastern has not identified a cumulative adverse impact on water resources from the implementation of the Project with other known planned developments.

No permanent impacts to water resources are associated with the Project, however; the Shermans Dale, Grantville West, and Grantville East Loops will require permanent conversion of PFO wetlands to scrub-shrub or emergent wetlands due to the establishment of new ROW. The PFO

within the new permanent ROW will be converted to PSS or PEM wetland. These segments will be co-located with existing, previously disturbed, and maintained ROWs. There are three high-quality watersheds within the Project but no exceptional value watersheds.

2.5 References

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TABLE 2.1-1
WATER SUPPLY WELLS WITHIN 200 FEET OF CONSTRUCTION WORK AREAS

GPS Point	MP	From Center Line (ft)	From Work Space (ft)	Type	Alignment Sheet	GPS Point Description	Elevation (ft)	Comments*
Holbrook								
22027	2.38	71	0	Unknown	H3-A-1003	Abandoned	1,051	Well exists within construction limits
Perulack East								
42312	3.40	64	0	Water	PU-A-1104	Well water	589	Well exists within construction limits
Grantville East								
56027	1.50	173	6	Water	GE-A-1102	Well (inactive) water	N/A	
Shermans Dale								
56936	5.39	148	52	Water	S5-A-1006	Well water	N/A	
Bernville								
57279	3.25	49	9	Water	B3-A-1004	Well water	N/A	
56594	4.46	238	94	Unknown	B3-A-1005	Well	N/A	

* Future surveys and coordination with landowners will determine if wells are active and should be monitored during construction

TABLE 2.1-2
SEPTIC SYSTEMS WITHIN 200 FEET OF CONSTRUCTION WORK AREAS

GPS Point	MP	From Center Line (ft)	From Work Space (ft)	Type	Alignment Sheet	GPS Point Description	Elevation (ft)	Comments*
Holbrook								
21295	5.83	111	1	Septic system	H3-A-1007	Manhole	993	
Bernville								
57280	3.33	376	31	Septic system	B3-A-1004	Holding tank	N/A	
Grantville West								
12709	0.95	42	0	Septic system	GE-A-1001; GE-A-1002	Septic system	456	Septic exists within construction limits
Perulack West								
	N/A	N/A	0	Septic system	N/A		670 +/-	Septic exists within Flea Market Wareyard
Shermans Dale								
4803	1.78	56	0	Septic system	S5-A-1002	Edge distribution box	414	Septic exists within construction limits
12183	4.71	127	62	Septic system	S5-A-1005	Holding tank	495	
5646	5.20	148	112	Septic system	S5-A-1006	Top distribution box	544	
56937	5.41	79	14	Septic system	S5-A-1006	Concrete cap	N/A	Septic not verified
56938	5.41	80	15	Septic system	S5-A-1006	Concrete cap	N/A	Septic not verified

* Future surveys and coordination with landowners will determine if septics are active and should be monitored during construction

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
Holbrook Loop										
H_S28*	Unnamed Drainage Channel	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	H3-A-1001
H_S25	UNT to Dunlap Creek	TAR 0.4	NRPW	WWF	Approved Trout Water	E	3	40	B	H3-A-1001
H_S01	UNT to Dunlap Creek	0.6	NRPW	WWF	Approved Trout Water	E	12	0	None	H3-A-1001
H_S02	UNT to Dunlap Creek	0.8	NRPW	WWF	Approved Trout Water	E	15	108	B, Tr-D	H3-A-1001
H_S34*	Unnamed Drainage Channel	TAR 1.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
H_S33*	Unnamed Drainage Channel	1.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	H3-A-1002
H_S03	UNT to Dunlap Creek	1.7	RPW	WWF	Approved Trout Water	I	4	0	None	H3-A-1002
H_S04	UNT to Dunlap Creek	1.7	RPW	WWF	Approved Trout Water	I	2	0	None	H3-A-1002
H_S05	UNT to Dunlap Creek	1.7	RPW	WWF	Approved Trout Water	I	2	0	None	H3-A-1002
H_P03	Unnamed Pond	1.9	N/A	N/A	None	N/A	N/A	N/A	None	H3-A-1002
H_S23	UNT To Dunlap Creek	2.1	NRPW	WWF	Approved Trout Water	E	4	108	B, Tr-D	H3-A-1003
H_S24	UNT To Dunlap Creek	2.1	RPW	WWF	Approved Trout Water	I	10	128	B, Tr-D	H3-A-1003
H_S24C	UNT To Dunlap Creek	2.2	NRPW	WWF	Approved Trout Water	E	3	52	B	H3-A-1003
H_S24B	UNT To Dunlap Creek	2.2	NRPW	WWF	Approved Trout Water	E	3	14	B	H3-A-1003

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
H_S24A	Dunlap Creek	2.2	RPW	WWF	Approved Trout Water	P	10	130	B, Tr-D	H3-A-1003
H_S06	Dunlap Creek	2.6	RPW	WWF	Approved Trout Water	P	4	154	B, Tr-D	H3-A-1003
H_S07	UNT to Dunlap Creek	2.6	NRPW	WWF	Approved Trout Water	E	3	63	B, Tr-D	H3-A-1003
H_S08	UNT to Dunlap Creek	2.7	NRPW	WWF	Approved Trout Water	E	4	68	B, Tr-D	H3-A-1003
H_S09	UNT to Dunlap Creek	3.2	NRPW	WWF	Approved Trout Water	E	4	78	B, Tr-D	H3-A-1004
H_S10	UNT to Dunlap Creek	3.5	RPW	WWF	Approved Trout Water	I	6	102	B, Tr-D	H3-A-1004
H_S11	UNT to Dunlap Creek	3.5	NRPW	WWF	Approved Trout Water	E	8	115	B, Tr-D	H3-A-1004
H_S12	UNT to Dunlap Creek	3.6	NRPW	WWF	Approved Trout Water	E	4	61	B	H3-A-1004
H_S15	UNT to Dunlap Creek	3.8	RPW	WWF	Approved Trout Water	I	6	107	B, Tr-D	H3-A-1004
H_S16	UNT to Dunlap Creek	3.8	NRPW	WWF	Approved Trout Water	E	4	0	None	H3-A-1004
H_S17	UNT to Jennings Run	4.1	NRPW	WWF	None	E	12	112	B, Tr-D	H3-A-1005
H_S32	UNT to Jennings Run	TAR 4.5	RPW	WWF	None	I	5	0	None	H3-A-1005
H_S31	UNT to Jennings Run	TAR 4.5	RPW	WWF	None	I	5	28	B	H3-A-1005
H_S18	UNT to Jennings Run	4.8	NRPW	WWF	None	E	3	260	B, Tr-D	H3-A-1005
H_S19	UNT to Jennings Run	4.9	RPW	WWF	None	I	4	90	B, Tr-D	H3-A-1006

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
H_S20	UNT to Jennings Run	4.9	NRPW	WWF	None	E	9	0	None	H3-A-1006
H_P02	Unnamed Pond	5.2	N/A	N/A	None	N/A	N/A	N/A	None	H3-A-1006
H_S21	UNT to Jennings Run	5.3	NRPW	WWF	None	E	8	125	B, Tr-D	H3-A-1006
H_P01	Unnamed Pond	5.9	N/A	N/A	None	N/A	N/A	N/A	None	H3-A-1007
H_S13	UNT to Jennings Run	5.9	RPW	WWF	None	P	9	104	B, Tr-D	H3-A-1007
H_S29*	Unnamed Drainage Channel	TAR 5.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	H3-A-1007
H_S30	Jennings Run	5.9	RPW	WWF	None	P	25	27	B	H3-A-1007
H_S14	UNT to Redstone Creek	6.5	NRPW	WWF	None	E	7	59	B, Tr-D	H3-A-1007
Perulack West Loop										
PW_S09	UNT to Bowers Run	1.2	RPW	HQ-CWF	None	I	1	124	B, Tr-D	PU-A-1002
PW_S08	UNT to Bowers Run	1.4	RPW	HQ-CWF	None	I	2	117	B, Tr-D	PU-A-1002
PW_S07	UNT to Bowers Run	1.4	RPW	HQ-CWF	None	P	2	197	B, Tr-D	PU-A-1002
PW_S06	UNT to Bowers Run	1.5	RPW	HQ-CWF	None	I	1	102	B, Tr-D	PU-A-1002
PW_S05	UNT to Bowers Run	1.6	RPW	HQ-CWF	None	P	2	105	B, Tr-D	PU-A-1002
PW_S04	UNT to Bowers Run	1.8	RPW	HQ-CWF	None	I	3	32	N/A	PU-A-1002
PW_S01	UNT to Bowers Run	1.8	RPW	HQ-CWF	None	P	4	102	N/A	PU-A-1002
PW_S03	UNT to Bowers Run	1.8	RPW	HQ-CWF	None	P	4	12	B, Tr-D	PU-A-1002
PW_P01	Unnamed Pond	1.8	N/A	N/A	None	N/A	N/A	N/A	None	PU-A-1002
PW_S02	UNT to Bowers Run	1.8	RPW	HQ-CWF	None	I	1	71	B, Tr-D	PU-A-1002
PW_S10	UNT to Shermans Creek	2.5	RPW	HQ-CWF	None	P	12	145	B, Tr-D	PU-A-1003
PW_S11	UNT to Shermans Creek	PAR 2.7	RPW	HQ-CWF	None	P	2	25	B	PU-A-1003

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
Perulack East Loop										
PE_S01	UNT to Cisna Run	0.5/TAR 0.5	RPW	HQ-CWF, MF	None	I	8	85	B, Tr-D	PU-A-1101
PE_S02	UNT to Cisna Run	0.6	RPW	HQ-CWF, MF	None	I	9	112	B	PU-A-1101
PE_S03	UNT to Bixler Run	2.7	RPW	CWF, MF	Approved Trout Water	P	6	232	B, Tr-D	PU-A-1103
PE_S04	Bixler Run	3.0	RPW	CWF, MF	Approved Trout Water	P	30	172	B, Tr-D	PU-A-1104
PE_S05	UNT to Bixler Run	3.4	RPW	CWF, MF	Approved Trout Water	P	6	143	B, Tr-D	PU-A-1104
PE_S06	UNT to Bixler Run	3.6	NRPW	CWF, MF	Approved Trout Water	E	5	191	B, Tr-D	PU-A-1104
PE_S07*	Unnamed Drainage Channel	3.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PU-A-1104
PE_S08	UNT to Bixler Run	3.8/ TAR 3.7	RPW	CWF, MF	Approved Trout Water	P	3	379	B, Tr-D	PU-A-1104
PE_S09	UNT to Bixler Run	4.0	NRPW	CWF, MF	Approved Trout Water	E	3	0	None	PU-A-1105
PE_S11	UNT to Muddy Run	4.9	NRPW	WWF, MF	None	E	3	0	None	PU-A-1106
PE_S10*	Unnamed Drainage Channel	TAR 4.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PU-A-1105
Shermans Dale Loop										
SD_S01	UNT to Stony Creek	0.1	RPW	CWF, MF	Approved Trout Water	I	2	142	B, Tr-D	S5-A-1001

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
SD_S02	UNT to Stony Creek	0.3	RPW	CWF, MF	Approved Trout Water	I	2	150	Tr-D	S5-A-1001
SD_S04	UNT to Stony Creek	0.5	RPW	CWF, MF	Approved Trout Water	I	3	113	B, Tr-D	S5-A-1001
SD_S03	UNT to Stony Creek	0.5	RPW	CWF, MF	Approved Trout Water	I	2	152	B, Tr-D	S5-A-1001
SD_S05	UNT to Stony Creek	0.6	RPW	CWF, MF	Approved Trout Water	I	4	345	B, Tr-D	S5-A-1001
SD_S09	UNT to Stony Creek	0.9	RPW	CWF, MF	Approved Trout Water	I	4	103	B, Tr-D	S5-A-1001
SD_S08	UNT to Stony Creek	0.9	RPW	CWF, MF	Approved Trout Water	I	2	110	B, Tr-D	S5-A-1001
SD_S07	UNT to Stony Creek	0.9	RPW	CWF, MF	Approved Trout Water	I	1	56	B, Tr-D	S5-A-1001
SD_S06	UNT to Stony Creek	1.6	RPW	CWF, MF	Approved Trout Water	P	10	0	None	S5-A-1002
SD_S10	UNT to Stony Creek	1.8	NRPW	CWF, MF	Approved Trout Water	E	5	3	B, Tr-D	S5-A-1002
SD_S11	UNT to Stony Creek	1.9	RPW	CWF, MF	Approved Trout Water	P	10	0	None	S5-A-1002
SD_S12	Stony Creek	1.9/ TAR 2.0	RPW	CWF, MF	Approved Trout Water	P	80	129	B, Tr-D	S5-A-1002
SD_S56	UNT to Stony Creek	1.9/ TAR 2.0	RPW	CWF, MF	Approved Trout Water	P	15	29	B	S5-A-1003
SD_S13	UNT to Stony Creek	2.1	RPW	CWF, MF	Approved Trout Water	I	3	0	None	S5-A-1003

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
SD_S16	UNT to Fishing Creek	3.5	RPW	WWF, MF	None	I	5	0	None	S5-A-1004
SD_S15	UNT to Fishing Creek	3.6	RPW	WWF, MF	None	I	4	133	Tr-D	S5-A-1004
SD_S17	UNT to Fishing Creek	3.6	RPW	WWF, MF	None	I	8	116	B, Tr-D	S5-A-1004
SD_S18	UNT to Fishing Creek	3.6	RPW	WWF, MF	None	I	3	82	Tr-D	S5-A-1004
SD_S19	UNT to Fishing Creek	3.6	RPW	WWF, MF	None	I	5	42	Tr-D	S5-A-1004
SD_S14	Fishing Creek	TAR 3.9	RPW	WWF, MF	None	P	25	25	B	S5-A-1005
SD_S24	UNT to Fishing Creek	4.2	RPW	WWF, MF	None	I	3	119	B, Tr-D	S5-A-1005
SD_S25	UNT to Fishing Creek	4.4	RPW	WWF, MF	None	I	2	129	B, Tr-D	S5-A-1005
SD_S53	UNT to Fishing Creek	4.5	RPW	WWF, MF	None	P	6	40	B	S5-A-1005
SD_S27	Fishing Creek	4.5	RPW	WWF, MF	None	P	30	255	B, Tr-D	S5-A-1005
SD_S26	UNT to Fishing Creek	4.7	RPW	WWF, MF	None	P	4	0	None	S5-A-1005
SD_S28	UNT to Fishing Creek	4.7	RPW	WWF, MF	None	P	4	138	Tr-D	S5-A-1006
SD_S21	UNT to Fishing Creek	4.9	RPW	WWF, MF	None	E	2	0	None	S5-A-1006
SD_S40	UNT to Fishing Creek	4.9	RPW	WWF, MF	None	I	3	87	B	S5-A-1006
SD_S39	UNT to Fishing Creek	4.9	RPW	WWF, MF	None	I	3	36	B	S5-A-1006
SD_S22	UNT to Fishing Creek	4.9	RPW	WWF, MF	None	P	4	114	B, Tr-D	S5-A-1006
SD_S23	UNT to Fishing Creek	5.2	RPW	WWF, MF	None	I	5	113	B, Tr-D	S5-A-1006
SD_S54	UNT to Fishing Creek	5.2	RPW	WWF, MF	None	I	2	2	B, Tr-D	S5-A-1006
SD_S29	UNT to Fishing Creek	5.5	RPW	WWF, MF	None	I	2	104	B, Tr-D	S5-A-1006
SD_S30	UNT to Fishing Creek	5.5	RPW	WWF, MF	None	I	2	142	B, Tr-D	S5-A-1006
SD_S57	UNT to Fishing Creek	5.5	NRPW	WWF, MF	None	E	1	41	B	S5-A-1006

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
SD_S55	UNT to Fishing Creek	5.5	RPW	WWF, MF	None	I	2	287	B, Tr-D	S5-A-1006
SD_S51	UNT to Fishing Creek	TAR 5.8	NRPW	WWF, MF	None	I	1	54	B	S5-A-1006
SD_S50	UNT to Fishing Creek	TAR 5.8	RPW	WWF, MF	None	E	3	26	B	S5-A-1006
SD_S49	UNT to Fishing Creek	TAR 5.8	RPW	WWF, MF	None	I	2	26	B	S5-A-1006
SD_S48	UNT to Fishing Creek	TAR 5.8	RPW	WWF, MF	None	I	3	28	B	S5-A-1006
SD_S47	UNT to Fishing Creek	TAR 5.8	RPW	WWF, MF	None	I	5	26	B	S5-A-1006
SD_S31	UNT to Fishing Creek	5.90	RPW	WWF, MF	None	I	2	110	B, Tr-D	S5-A-1007
SD_S32	UNT to Fishing Creek	5.9	RPW	WWF, MF	None	P	5	102	B, Tr-D	S5-A-1007
SD_S33	UNT to Fishing Creek	6.4	RPW	WWF, MF	None	I	1	0	None	S5-A-1007
SD_S34	UNT to Fishing Creek	6.4	RPW	WWF, MF	None	P	7	102	B, Tr-D	S5-A-1007
SD_P01	Unnamed Pond	PAR 7.01	N/A	N/A	None	N/A	N/A	0	None	N/A
SD_S58*	Unnamed Drainage Channel	PAR 7.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grantville West Loop										
GW_P04	Unnamed Pond	PAR 0.0	N/A	N/A	None	N/A	N/A	N/A	B	N/A
GW_S01	UNT to Swatara Creek	PAR 0.0	NRPW	CWF, MF	None	E	1	24	B	N/A
GW_S02	UNT to Swatara Creek	0.1	NRPW	CWF, MF	None	E	1	317	B,Tr-D	GE-A-1001
GW_S04	UNT to Swatara Creek	0.1	RPW	CWF, MF	None	I	3	88	B,Tr-D	GE-A-1001
GW_S03	Swatara Creek	0.2	RPW	CWF, MF	None	P	200	409	B,Tr-D	GE-A-1001
GW_P01	Unnamed Pond	0.4	N/A	N/A	None	N/A	N/A	N/A	None	GE-A-1001
GW_S07*	Unnamed Drainage Channel	TAR 0.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	GE-A-1001
GW_P02	Unnamed Pond	0.8	N/A	N/A	None	N/A	N/A	N/A	B	GE-A-1001

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
GW_S05	UNT to Swatara Creek	1.1	RPW	CWF, MF	None	P	15	40	B	GE-A-1002
GW_S11	UNT to Swatara Creek	1.1	NRPW	CWF, MF	None	E	6	0	None	GE-A-1002
GW_S12	UNT to Swatara Creek	1.3	RPW	CWF, MF	None	I	6	0	None	GE-A-1002
GW_S08	UNT to Swatara Creek	TAR 1.4	RPW	CWF, MF	None	P	5	12	B	GE-A-1002
GW_S06	Swatara Creek	1.4	RPW	CWF, MF	None	P	200	339	B,Tr-D	GE-A-1002
GW_S13	UNT to Swatara Creek	1.4	NRPW	CWF, MF	None	E	3	51	B	GE-A-1002
GW_S09	UNT to Swatara Creek	TAR 1.5	RPW	CWF, MF	None	P	5	21	B	N/A
GW_P03	Unnamed Pond	1.7	N/A	N/A	None	N/A	N/A	N/A	None	GE-A-1002
Grantville East Loop										
GE_S03	UNT to Little Swatara Creek	0.3	RPW	WWF, MF	None	P	15	76	B, Tr-D	GE-A-1001
GE_S04	UNT to Little Swatara Creek	0.3	RPW	WWF, MF	None	I	5	53	B, Tr-D	GE-A-1001
GE_S05	UNT to Little Swatara Creek	0.4	RPW	WWF, MF	None	I	5	94	B	GE-A-1001
GE_S06	UNT to Little Swatara Creek	0.4	NRPW	WWF, MF	None	E	3	421	B, Tr-D	GE-A-1001
GE_S07	UNT to Little Swatara Creek	0.5	RPW	WWF, MF	None	I	3	35	B, Tr-D	GE-A-1001
GE_S08	UNT to Little Swatara Creek	0.6	RPW	WWF, MF	None	I	3	181	B, Tr-D	GE-A-1001
GE_S15	UNT to Little Swatara Creek	1.2	RPW	WWF, MF	None	P	15	125	B, Tr-D	GE-A-1002
GE_S01	UNT to Little Swatara Creek	1.9	RPW	WWF, MF	None	I	2	255	B, Tr-D	GE-A-1003
GE_P01	Unnamed Pond	2.0	N/A	N/A	None	N/A	N/A	N/A	None	GE-A-1003
GE_S02	UNT to Little Swatara Creek	2.1	RPW	WWF, MF	None	P	10	113	B, Tr-D	GE-A-1003
GE_S10	UNT to Little Swatara Creek	2.4	RPW	WWF, MF	None	I	3	105	B	GE-A-1003
GE_S09	UNT to Little Swatara Creek	2.4	RPW	WWF, MF	None	P	15	252	B, Tr-D	GE-A-1003

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
GE_S12	UNT to Little Swatara Creek	2.4	RPW	WWF, MF	None	I	3	0	B	GE-A-1003
GE_S13	UNT to Little Swatara Creek	2.4	RPW	WWF, MF	None	I	3	0	B, Tr-D	GE-A-1003
GE_S16	UNT to Little Swatara Creek	2.5	RPW	WWF, MF	None	P	4	1,041	B, Tr-D	GE-A-1003
GE_S11	UNT to Little Swatara Creek	2.5	NRPW	WWF, MF	None	E	3	0	B, Tr-D	GE-A-1003
GE_S17	UNT to Little Swatara Creek	2.7	RPW	WWF, MF	None	I	3	0	None	GE-A-1003
GE_S18	UNT to Little Swatara Creek	2.8	NRPW	WWF, MF	None	E	3	0	None	GE-A-1003
GE_S14	UNT to Little Swatara Creek	3.6	RPW	WWF, MF	None	P	15	104	B, Tr-D	GE-A-1003
Bernville Loop										
B_S01	Schuylkill River	0.2	TNW	WWF, MF	None	P	210	50	B, Tr-D	B3-A-1001
B_S04	UNT to Schuylkill River	0.2	RPW	WWF, MF	None	I	4	0	None	B3-A-1001
B_S02	UNT to Schuylkill River	0.3	NRPW	WWF, MF	None	E	25	240	B, Tr-D	B3-A-1001
B_P01	Unnamed pond	1.7	N/A	N/A	None	N/A	N/A	N/A	None	B3-A-1002
B_S06	UNT to Schuylkill River	TAR 3.2	RPW	WWF, MF	None	I	2	31	B	N/A
B_S03	Laurel Run	4.7	RPW	CWF, MF	None	P	12	111	B, Tr-D	B3-A-1005
Uniontown Compressor Station										
UT_S01	UNT to Cove Run	N/A	NRPW	WWF	None	E	3	0	None	N/A
UT_S02	UNT to Cove Run	N/A	NRPW	WWF	None	E	1	0	None	N/A
UT_S03*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UT_S04	UNT to Cove Run	N/A	NRPW	WWF	None	E	1	0	None	N/A
UT_S05	UNT to Cove Run	N/A	NRPW	WWF	None	E	2	0	None	N/A
UT_S06	UNT to Cove Run	N/A	NRPW	WWF	None	E	4	0	None	N/A

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
Delmont Compressor Station										
Del_S01*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Del_S02*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Del_S03*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Del_S04*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Del_S05*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Del_S06*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Del_S10	Beaver Run	N/A	RPW	HQ-CWF	None	P	20	0	None	N/A
Del_S11	UNT to Beaver Run	N/A	RPW	HQ-CWF	None	I	1	0	None	N/A
Del_P01	Unnamed Pond	N/A	N/A	N/A	None	N/A	N/A	0	None	N/A
Armagh Compressor Station										
Arm_S01	UNT to East Branch Richards Run	N/A	NRPW	CWF	None	E	1	0	None	N/A
Arm_S02	UNT to East Branch Richards Run	N/A	NRPW	CWF	None	E	2	0	None	N/A
Entriken Compressor Station										
Ent_S01*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ent_S02*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ent_S03*	Unnamed Drainage Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ent_S04	UNT to Great Trough Creek	N/A	NRPW	TSF, MF	None	E	2	0	None	N/A
Ent_S05	UNT to Great Trough Creek	N/A	NRPW	TSF, MF	None	E	5	0	None	N/A
Ent_S06	UNT to Great Trough Creek	N/A	RPW	TSF, MF	None	I	5	0	None	N/A

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
Ent_S07	UNT to Great Trough Creek	N/A	NRPW	TSF, MF	None	E	3	0	None	N/A
Ent_S07B	UNT to Great Trough Creek	N/A	NRPW	TSF, MF	None	E	4	0	None	N/A
Ent_S08	UNT to Great Trough Creek	N/A	NRPW	TSF, MF	None	E	4	0	None	N/A
National Pike Wareyard										
H_S26	UNT to Fourmile Run	N/A	NRPW	WWF	None	E	8	0	None	N/A
H_S27	UNT to Fourmile Run	N/A	NRPW	WWF	None	E	5	0	None	N/A
H_P04	Unnamed Pond	N/A	N/A	N/A	None	N/A	N/A	N/A	None	N/A
H_P05	Unnamed Pond	N/A	N/A	N/A	None	N/A	N/A	N/A	None	N/A
H_P06	Unnamed Pond	N/A	N/A	N/A	None	N/A	N/A	N/A	None	N/A
Highway 119 Wareyard										
No waterbodies found within the environmental study area.										
Flea Market Wareyard										
FMW_P01	Unnamed pond	N/A	N/A	N/A	None	N/A	N/A	N/A	None	N/A
FMW_S01	UNT to Tuscarora Creek	N/A	RPW	CWF, MF	Approved Trout Water	I	4	0	None	N/A
FMW_S02	UNT to Tuscarora Creek	N/A	RPW	CWF, MF	Approved Trout Water	I	3	0	None	N/A
FMW_S03	UNT to Tuscarora Creek	N/A	NRPW	CWF, MF	Approved Trout Water	E	2	0	None	N/A
FMW_S04	UNT to Tuscarora Creek	N/A	RPW	CWF, MF	Approved Trout Water	I	5	0	None	N/A
FMW_S05	UNT to Tuscarora Creek	N/A	NRPW	CWF, MF	Approved Trout Water	E	2	0	None	N/A

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		
Stone Quarry Wareyard										
No waterbodies found within the environmental study area.										
Bottom Road Wareyard										
No waterbodies found within the environmental study area.										
Highway 22-1 Wareyard										
HWY22_P02	Unnamed pond	N/A	N/A	N/A	None	N/A	N/A	N/A	None	N/A
Highway 22-2 Wareyard										
HWY22_P01	Unnamed Pond	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	N/A
Highway 61 Wareyard										
HWY61_S05	UNT to Willow Creek	N/A	NRPW	WWF, MF	Approved Trout Water, Class A Wild Trout Stream	E	8	0	None	N/A
Doughten Road Wareyard										
No waterbodies found within the environmental study area.										
Prescott Drive Wareyard										
No waterbodies found within the environmental study area.										

LEGEND

P = Perennial; I = Intermittent; E = Ephemeral

UNT = unnamed tributary

* = Drainage Channels without defined bed and banks

TABLE 2.2-1
WATERBODIES CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Waterbody Site ID	Waters Name	Approx. MP	Water Type[a]	PA Code Chapter 93 Designation[b]	Special Fishery Class.	Stream Type	Stream Width		Impact Desc.[c]	Alignment Sheet Number
							Stream Width (TOB)	Centerline of Stream (ft) within Workspace		

NOTES:

a DELINEATE = delineation only; TNW = TNWs, including territorial seas; RPW = relatively permanent waters that flow directly or indirectly into TNWs; NRPW = non-RPWs that flow directly or indirectly into TNWs; ISOLATE = isolated (interstate or intrastate) waters, including isolated wetlands; TNWRPW = tributary consisting of both RPWs and non-RPWs.

b Designated water uses and water quality criteria as defined by Pennsylvania Code Chapter 93.9 (1979). WWF = Warm Water Fishery, CWF = Cold Water Fishes, EV = Exceptional Value, HQ = High Quality, MF = migratory fishes, HQ = high quality

c B = Temporary Bridge Crossing; Tr-D = Utility Line Trenching – Dry Crossing; Tr-W = Utility Line Trenching – Wet Crossing

TABLE 2.2-2
WATERBODIES IDENTIFIED AT THE BI-DIRECTIONAL FLOW FACILITIES

Waterbody Site ID	Waters Name	Waters Type[a]	Stream Type	Stream Impact Stream Width (TOB)	Stream Impact Centerline of Stream (ft)	Impact Desc.[b]	Align. Sheet No.
Uniontown Compressor Station							
Refer to Table 2.2-1.							
Holbrook Compressor Station							
HB_S01	UNT to North Fork Dunkard Fork	NRPW	E	0	0	None	N/A
HB_S02	UNT to North Fork Dunkard Fork	NRPW	E	0	0	None	N/A
HB_S03	UNT to North Fork Dunkard Fork	RPW	P	0	0	None	N/A
HB_S04	UNT to North Fork Dunkard Fork	NRPW	E	0	0	None	N/A
HB_S05	North Fork Dunkard Fork	RPW	P	0	0	None	N/A
Berne-Holbrook L&R MP 704.78							
No waterbodies found within the environmental study area.							
Berne-Holbrook L&R MP 708.75							
BE_HB_L&R_S 01	UNT to Big Run	NRPW	E	0	0	None	N/A
BE_HB_L&R_S 02	UNT to Big Run	NRPW	E	0	0	None	N/A
BE_HB_L&R_S 03	UNT to Big Run	NRPW	E	0	0	None	N/A
BE_HB_L&R_S 04	UNT to Big Run	RPW	P	0	0	None	N/A
Berne-Holbrook L&R MP 709.48							
BE_HB_L&R_S 05	UNT to Ohio River	NRPW	E	0	0	None	N/A
Berne Compressor Station							
BE_S01	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S02	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S03	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S04	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S05	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S06	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S06a	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S06b	UNT to Death Run	NRPW	E	0	0	None	N/A
BE_S07	UNT to Death Run	NRPW	E	0	0	None	N/A

TABLE 2.2-2
WATERBODIES IDENTIFIED AT THE BI-DIRECTIONAL FLOW FACILITIES

Waterbody Site ID	Waters Name	Waters Type[a]	Stream Type	Stream Impact Stream Width (TOB)	Stream Impact Centerline of Stream (ft)	Impact Desc.[b]	Align. Sheet No.
BE_S08	Death Run	RPW	P	0	0	None	N/A
Athens-Berne L&R MP 677.30							
AT_BE_L&R_S 01	UNT to East Fork Duck Creek	NRPW	E	0	0	None	N/A
Athens Compressor Station							
AT_S01	UNT to Biddle Creek	NRPW	E	0	0	None	N/A
Wheelersburg-Athens L&R MP 611.65							
WB_AT_L&R_S 01	Sisson Run	RPW	P	0	0	None	N/A
Summerfield Compressor Station							
Sum_S01	Glady Run	RPW	P	0	0	None	N/A
Somerset Compressor Station							
No waterbodies found within the environmental study area.							
Five Points Compressor Station							
No waterbodies found within the environmental study area.							
Wheelersburg Compressor Station							
WB_S01	UNT to Pine Creek	NRPW	E	0	0	None	N/A
Owingsville-Wheelersburg L&R MP 561.8							
OV_WB_L&R_S 01	UNT to Patton Run	NRPW	E	0	0	None	N/A
OV_WB_L&R_S 02	Patton Run	RPW	I	0	0	None	N/A
Owingsville Compressor Station							
OV_S01	Little Indian Creek	RPW	I	0	0	None	N/A
OV_S02	UNT to Little Indian Creek	NRPW	E	0	0	None	N/A
OV_S03	UNT to Little Indian Creek	NRPW	E	0	0	None	N/A
Danville-Owingsville L&R MP 456.66							
No waterbodies found within the environmental study area.							
Danville Compressor Station							
DV_S01	UNT to Knoblick Creek	NRPW	E	0	0	None	N/A
DV_S02	UNT to Knoblick Creek	NRPW	E	0	0	None	N/A
DV_S03	UNT to Knoblick Creek	NRPW	E	0	0	None	N/A

TABLE 2.2-2
WATERBODIES IDENTIFIED AT THE BI-DIRECTIONAL FLOW FACILITIES

Waterbody Site ID	Waters Name	Waters Type[a]	Stream Type	Stream Impact Stream Width (TOB)	Stream Impact Centerline of Stream (ft)	Impact Desc.[b]	Align. Sheet No.
Tompkinsville-Danville L&R MP 397.61							
No waterbodies found within the environmental study area.							
Tompkinsville Compressor Station							
TV_S01	UNT to Skaggs Creek	NRPW	E	0	0	None	N/A
TV_S02	UNT to Skaggs Creek	NRPW	E	0	0	None	N/A
TV_S02b	UNT to Skaggs Creek	NRPW	E	0	0	None	N/A
Gladeville-Tompkinsville L&R MP 306.10 Ln 25							
Glad_Tomp_L&R_S01	UNT to Cumberland River	NRPW	E	0	0	None	N/A
Gladeville Compressor Station							
Glad_S01	UNT to Sinking Creek	RPW	I	0	0	None	N/A
Metering and Regulating 70315							
No waterbodies found within the environmental study area.							
Metering and Regulating 73025							
No waterbodies found within the environmental study area.							
Mt. Pleasant-Gladeville L&R MP 268.11							
MtPl_Glad_L&R_S01	UNT to Rocky Fork Creek	NRPW	E	0	0	None	N/A
MtPl_Glad_L&R_S02	UNT to Rocky Fork Creek	NRPW	E	0	0	None	N/A
MtPl_Glad_L&R_S03	UNT to Rocky Fork Creek	RPW	P	0	0	None	N/A
Mt. Pleasant Compressor Station							
No waterbodies found within the environmental study area.							
Barton-Mt. Pleasant L&R MP 185.03							
Bar_MtPl_S&R_S01	Little Wolf Creek	RPW	P	0	0	None	N/A
Barton Compressor Station							
No waterbodies found within the environmental study area.							
Egypt-Barton L&R MP 115.40 Ln 25							
Egy_Bar_L&R_S01	UNT to Lick Skillet Creek	NRPW	E	0	0	None	N/A
Egy_Bar_L&R_S02	Lick Skillet Creek	RPW	P	0	0	None	N/A
Egypt Compressor Station							
No waterbodies found within the environmental study area.							

TABLE 2.2-2
WATERBODIES IDENTIFIED AT THE BI-DIRECTIONAL FLOW FACILITIES

Waterbody Site ID	Waters Name	Waters Type[a]	Stream Type	Stream Impact Stream Width (TOB)	Stream Impact Centerline of Stream (ft)	Impact Desc.[b]	Align. Sheet No.
Kosciusko-Egypt L&R MP 42.00 Ln 30							
No waterbodies found within the environmental study area.							
Kosciusko-Egypt L&R MP 50.54 Ln 10							
No waterbodies found within the environmental study area.							
Kosciusko Compressor Station							
Kos_S01	UNT to Conehoma Creek	NRPW	E	0	0	None	N/A
Kosciusko Pipeline Crossover							
Kos_S02	UNT to Conehoma Creek	NRPW	E	3	0	None	N/A
Kos_S03	UNT to Conehoma Creek	RPW	P	15	0	None	N/A
Kos_S04	UNT to Conehoma Creek	NRPW	E	6	32	B	N/A
Kos_S05	UNT to Conehoma Creek	NRPW	P	3	25	B	N/A
Clinton-Kosciusko L&R MP 359.46							
No waterbodies found within the environmental study area.							
Clinton Compressor Station							
Clin_S01	UNT to Bogue Chitto	RPW	I	0	0	None	N/A
Union Church-Clinton L&R MP 290.51							
No waterbodies found within the environmental study area.							
Union Church Compressor Station							
No waterbodies found within the environmental study area.							

LEGEND
P = Perennial; I = Intermittent; E = Ephemeral

NOTES:
a DELINEATE = delineation only; TNW = TNWs, including territorial seas; RPW = relatively permanent waters that flow directly or indirectly into TNWs; NRPW = non-RPWs that flow directly or indirectly into TNWs; ISOLATE = isolated (interstate or intrastate) waters, including isolated wetlands; TNWRPW = tributary consisting of both RPWs and non-RPWs.

b B = Temporary Bridge Crossing; Tr-D = Utility Line Trenching – Dry Crossing; Tr-W = Utility Line Trenching – Wet Crossing

TABLE 2.2-3
TEAM 2014 WATERBODY CROSSING SUMMARY

Pipeline/Facility Name	Ephemeral Stream	Intermittent Stream	Perennial Stream	Pond	Drainage Channel*	Total
Pipeline Segments						
Holbrook Loop	17	9	4	3	4	33
Perulack West Loop	0	5	6	1	0	12
Perulack East Loop	3	2	4	0	2	9
Shermans Dale Loop	4	29	12	1	1	46
Grantville West Loop	4	2	5	4	1	15
Grantville East Loop	3	9	6	1	0	19
Bernville Loop	1	2	2	1	0	6
Compressor Stations						
Uniontown Compressor Station	5	0	0	0	1	5
Delmont Compressor Station	0	1	1	1	6	3
Armagh Compressor Station	2	0	0	0	0	2
Entriken Compressor Station	5	1	0	0	3	6
Wareyards						
National Pike Wareyard	2	0	0	3	0	5
Highway 119 Wareyard	0	0	0	0	0	0
Flea Market Wareyard	2	3	0	1	0	6
Stone Quarry Wareyard	0	0	0	0	0	0
Bottom Road Wareyard	0	0	0	0	0	0
Highway 22-1 Wareyard	0	0	0	1	0	1
Highway 22-2 Wareyard	0	0	0	1	0	1
Highway 61 Wareyard	1	0	0	0	0	1
Doughten Road Wareyard	0	0	0	0	0	0
Prescott Drive Wareyard	0	0	0	0	0	0
Bi-Directional Flow Facilities						
Holbrook Compressor Station	3	0	2	0	0	5
Bern-Holbrook L/R MP 704.78	0	0	0	0	0	0
Bern-Holbrook L/R MP 708.75	3	0	1	0	0	4
Bern- Holbrook L/R MP 709.48	1	0	0	0	0	1
Berne Compressor Station	9	0	1	0	0	10
Athens-Bernville L/R MP 677.30	1	0	0	0	0	1
Athens Compressor Station	1	0	0	0	0	1
Wheelersburg-Athens L/R MP 611.65	0	0	1	0	0	1
Summerfield Compressor Station	0	0	1	0	0	1

TABLE 2.2-3
TEAM 2014 WATERBODY CROSSING SUMMARY

Pipeline/Facility Name	Ephemeral Stream	Intermittent Stream	Perennial Stream	Pond	Drainage Channel*	Total
Somerset Compressor Station	0	0	0	0	0	0
Five Points Compressor Station	0	0	0	0	0	0
Wheelersburg Compressor Station	1	0	0	0	0	1
Owingsville-Wheelersburg L/R MP 561.8	1	1	0	0	0	2
Owingsville Compressor Station	2	1	0	0	0	3
Danville-Owingsville L/R MP 465.55	0	0	0	0	0	0
Danville Compressor Station	3	0	0	0	0	3
Tompkinsville-Danville L/R MP 397.61	0	0	0	0	0	0
Tompkinsville Compressor Station	3	0	0	0	0	3
Gladeville-Thompkinsville L/R MP 30.10 Ln 25	1	0	0	0	0	1
Gladeville Compressor Station	0	1	0	0	0	1
M&R 70315	0	0	0	0	0	0
M&R 73025	0	0	0	0	0	0
Mt. Pleasant-Gladeville L/R MP 268.11	2	0	1	0	0	3
Mount Pleasant Compressor Station	0	0	0	0	0	0
Barton- Mt. Pleasant L/R MP 185.03	0	0	1	0	0	1
Barton Compressor Station	0	0	0	0	0	0
Egypt- Barton L/R MP 115.40	1	0	1	0	0	2
Egypt Compressor Station	0	0	0	0	0	0
Kosciusko-Egypt L/R MP 42.00 Ln 30	0	0	0	0	0	0
Kosciusko-Egypt L/R MP 50.54 Ln 10	0	0	0	0	0	0
Kosciusko Compressor Station	1	0	0	0	0	1
Kosciusko Pipeline Crossover	2	0	2	0	0	4
Clinton-Kosciusko L/R MP 359.46	0	0	0	0	0	0
Clinton Compressor Station	0	1	0	0	0	1
Union Church- Clinton L/R MP 290.51	0	0	0	0	0	0
Union Church Station	0	0	0	0	0	0
Total	**84**	**67**	**51**	**18**	**18**	**220**

* Ephemeral Drainage Channels without bed and banks are not counted in the total number of waterbodies reported.

TABLE 2.2-4
CONTAMINATED SITES WITHIN ONE MILE OF THE PROJECT

Site Name	Database	Milepost	Latitude/ Longitude	Distance from Centerline (miles)	Direction from Centerline	Notes
Holbrook Loop						
54 W. Main Street, New Salem, PA 15468	Brownfield	0.7	39.926508 N -79.839031 W	0.6	NE	0.5 acre in size. No information given regarding contaminant source or status
Giant Eagle 36	RCRAGN	6.6	39.934151 N -79.729638 W	0.5	NE	CEG. Hazardous waste - silver and ignitable waste
Columbia Gas	RCRAGN	6.6	39.926339 N -79.726815 W	0.5	SE	CEG. Hazardous waste including benzene, methyl ethyl ketone, and TCE
Marsolino Cont. Company Inc	RCRAGN	6.6	39.924176 N -79.726609 W	0.6	SE	SQG. Hazardous waste - ignitable waste
Costabiles Custom Auto Specialties	RCRAGN	6.6	39.924075 N -79.726876 W	0.6	SE	CEG. Hazardous waste including lead, xylene, ignitable waste, methanol, and toulene
Nucor Wire Products	RCRAGN	0.6	39.927494 N -79.841923 W	0.7	SW	CEG. Hazardous waste - including barium, cadmium, chromium, and methyl ethyl ketone
Hunters Truck Sales	RCRAGN	6.6	39.917661 N -79.726882 W	0.9	SE	SQG. Hazardous waste - ignitable waste
Gerome MFG Co.	RCRAGN	6.6	39.922243 N -79.719811 W	1.0	SE	Hazardous waste including barium, chromium, and methyl ethyl ketone
Perulack West Loop						
Harcon Corp	RCRAGN	2.5	40.33622 N -77.510141 W	0.7	SW	SQG. Hazardous waste - lead
Perulack East Loop						
Loyesville Youth Development Center	RCRAGN	5.3	40.368676 N -77.346806 W	0.7	NE	CEG. Hazardous waste - unspecified
Shermans Dale Loop						
701 Orchard Lane Dauphin, PA	ERNS	0.2	40.381999 N -76.897612 W	0.5	SE	09/09/2011. Due to flooding, two fuel oil tanks found floating down a creek with a strong diesel smell present. The material within the tank was unconfirmed.

TABLE 2.2-4
CONTAMINATED SITES WITHIN ONE MILE OF THE PROJECT

Site Name	Database	Milepost	Latitude/ Longitude	Distance from Centerline (miles)	Direction from Centerline	Notes
Grantville West Loop						
Greater Lebanon Refuse Authority	SWL	2.3	40.366111 N -76.493333 W	0.6	SE	Two sites identified with this name and location.
Simpson Body Shop	RCRAGN	2.0	40.375665 N -76.508501 W	0.1	NE	SQG. Hazardous waste including ignitable waste, non halogenated solvents such as toluene, xylene, acetone, ethyl acetate, and ethyl benzene
Grantville East Loop						
Tetco Valve 7	RCRAGN	0.0	40.385601 N -76.443492 W	0.5	SW	SQG. Hazardous waste including lead, benzene, and ignitable waste
39 Golf Road Lebanon, PA	ERNS	1.1	40.391422 N -76.415084 W	0.4	NE	12/2004. Due to a leak, there was a release of approximately 800 gallons of heating oil from a home heating tank. A sump pump discharged the material into an UNT of Swatara Creek. Remedial action was taken but the ultimate status of the water supply is unknown.
Bernville Loop						
Berks Transfer Station	SWL	1.7	40.423611 N -75.918333 W	106 feet	NW	-
Huller Lane Corp	SWL	0.9	40.420833 N -75.926667 W	0.4	SE	Residual landfill
Suburban Temple	LUST	1.6	40.415652 N -75.919316 W	0.6	SW	A USTPT leaked an undisclosed amount of petroleum on the site. The status of cleanup is currently listed as open, meaning interim or redial action has been initiated and clean up is underway.
Ontelaunee Power Operating Company	RCRAGN	0.7	40.421784 N -75.936359 W	0.1	SE	CEG. Hazardous waste including lead, benzene, corrosive waste, and ignitable waste
Cooper Auto Reconditioning	RCRAGN	1.8	40.422845 N -75.917356 W	0.1	SE	CEG. Hazardous waste including ignitable waste, methyl ethyl ketone, non-halogenated solvents including but not limited to xylene, acetone, and ethyl acetate
Pollock Reading Inc.	RCRAGN	1.4	40.420307 N -75.923621 W	0.3	SW	SQG. Hazardous waste - undisclosed. Facility used for smelting and refining nonferrous metals, with the exception of copper and aluminum.

TABLE 2.2-4
CONTAMINATED SITES WITHIN ONE MILE OF THE PROJECT

Site Name	Database	Milepost	Latitude/ Longitude	Distance from Centerline (miles)	Direction from Centerline	Notes
Reading Tube DIV of Cambridge Lee	RCRAGN	0.6	40.417585 N -75.93881 W	0.3	SW	LQG. Hazardous waste including ignitable waste, corrosive waste, benzene, TCE, and spent halogenated solvents such as trichloroethylene and methylene
Mike Grims Truck Wreck Spec Inc	RCRAGN	1.5	40.428074 N -75.919929 W	0.3	NE	CEG. Hazardous waste - ignitable waste, corrosive waste, cadmium, lead, and spent halogenated solvents used in degreasing such as TCE and methylene
Benntag Northeast Inc.	RCRAGN	0.6	40.41462 N -75.938596 W	0.5	SE	Two sites identified. LQG. Hazardous waste including reactive waste, barium, and chromium
Tetco-Schuylkill R PJ MP 205	RCRAGN	0.6	40.414597 N -75.938983 W	0.5	SE	LQG. Hazardous waste including ignitable waste and benzene
J and J Heffleger Custom Kitchens Inc	RCRAGN	0.6	40.414597 N -75.938983 W	0.5	SE	CEG. Hazardous waste including ignitable waste, cadmium, lead, and mercury
Suburban Heating Oil Partners LLC	RCRAGN	1.6	40.415652 N -75.919316 W	0.6	SW	CEG. Hazardous waste - ignitable waste
Wal-Mart Supercenter No 2614	RCRAGN	1.6	40.415347 N -75.919983 W	0.6	SW	SQG. Hazardous waste including arsenic, barium, lead, mercury, and silver
Stoudts SVC STA	RCRAGN	4.3	40.406897 N -75.87024 W	0.6	SW	CEG. Hazardous waste - TCE
Berks Traffic Services	RCRAGN	2.5	40.433082 N -75.904791 W	0.7	NE	SQG. Hazardous waste including ignitable waste, xylene, acetone, and ethyl acetate
Bobs Auto Sales	RCRAGN	1.4	40.413115 N -75.92287 W	0.8	SW	SQG. Hazardous waste - non-halogenated solvents such as toluene, methyl ethyl ketone, carbon disulfide, and pyridine
Sam's Club No. 8160	RCRAGN	1.4	40.412377 N -75.923885 W	0.8	SW	SQG. Hazardous waste including arsenic, corrosive waste, barium, selenium, and benzene
Heffner, Lee Inc	RCRAGN	1.5	40.41123 N -75.920044 W	0.9	SW	SQG. Hazardous waste including non-halogenated solvents such as cresols, cresylic acid, and nitrobenzene
Highway Materials Inc	RCRAGN	5.3	40.401121 N -75.859626 W	1.0	SE	CEG. Hazardous waste - ignitable waste

TABLE 2.2-4
CONTAMINATED SITES WITHIN ONE MILE OF THE PROJECT

Site Name	Database	Milepost	Latitude/ Longitude	Distance from Centerline (miles)	Direction from Centerline	Notes
Uniontown Compression Station						
No geocoded sites identified.						
Delmont Compressor Station						
No geocoded sites identified.						
Armagh Compressor Station						
No geocoded sites identified						
Entriken Compressor Station						
No geocoded sites identified.						
Kosciusko Pipeline Crossover						
No geocoded sites identified.						

CEG = Conditionally Exempt Generator (producing <100kg of hazardous waste per month)
ERNS = Emergency Response Notification System
LQG = Large Quantity Generator (producing >1000kg of hazardous waste per month)
LUST = Storage Tank Release Incidents
RCRAGN = Resource Conservation and recovery Information System Generators
SQG = Small Quantity Generator (producing between 100 and 1000kg of hazardous waste per month)
SWL = Solid Waste Landfill
TCE = trichloroethylene
USTPT = Underground Storage Petroleum Tank

TABLE 2.2-5
SUMMARY OF IMPACTS TO WETLANDS AND WATERBODIES

Feature type	Acres Affected	
	Construction ROW	Operation / Permanent ROW*
WWF	1.9	0.0
CWF	4.1	0.0
HQ-CWF	0.2	0.0
Subtotal	**6.2**	**0.0**
PEM	5.7	0.0
PSS	0.1	<0.1
PFO	3.7	1.5
Subtotal	**9.5**	**1.5**
Total	**15.7**	**1.5**

* These acreages refer to the area of waterbody segments or wetlands within new operation or permanent ROW only. Impacts to ponds are not calculated in this table

CWF = cold water fishery
WWF = warm water fishery
MF = migratory fishery
PEM = palustrine emergent marsh
PSS = palustrine scrub-shrub
PFO = palustrine forested

TABLE 2.2-6
PRELIMINARY HYDROSTATIC TEST WATER WITHDRAWAL
AND DISCHARGE LOCATIONS FOR THE PROJECT

Facility/State/County	Withdrawal Location/Source[a]	Discharge Location[b]	Approximate Amount (gallons)[c]
Holbrook Loop			
Fayette, PA	Dunlap Creek Lake	MP 0.0, MP 6.7	1,765,846
Perulack West Loop			
Perry, PA	Haul In	MP 0.0, MP 2.7	735,974
Perulack East Loop			
Perry, PA	Bixler Run Stream	MP 0.0, MP 5.4	1,463,879
Shermans Dale Loop			
Dauphin, PA	Fishing Creek	MP 0.0, MP 7.1	1,887,164
Grantville West Loop			
Lebanon, PA	Swatara Creek	MP 0.0, MP 2.3	647,028
Grantville East Loop			
Lebanon, PA	Swatara Creek	MP 0.0, MP 3.8	1,024,460
Bernville Loop			
Berks, PA	Schuylkill River	MP 0.0, MP 5.6	1,498,957
		Total	**9,023,308**

a Municipal sources may be utilized if stream conditions are not optimal.

b Discharge location to be determined (TBD) based on class and elevation data.

c Maximum volume of water based on assumption that entire segment will be tested at one time. This volume may be reduced if multiple test sections are used.

TABLE 2.2-7
VARIANCE TABLE

Variance Number	Stream/ Wetland ID	Discharge	Alignment Sheet Number	MP	Description
1	H_S02	Holbrook Discharge	H3-A-1001	0.8	The additional temporary workspace is located less than 50 feet from the edge of waterbody H_S02. Due to this required workspace, a variance from the 50-foot waterbody buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a road crossing. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the waterbody from the disturbed area.
2	H_W01/ H_S33	Holbrook Discharge	H3-A-1001	1.6	The additional temporary workspace is located less than 50 feet from the edge of wetland H_W01/waterbody H_S33. Due to this required workspace, a variance from the 50-foot wetland/waterbody buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to an access road. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland and waterbody from the disturbed area.
3	H_W13	Holbrook Discharge	H3-A-1003	2.1	The additional temporary workspace is located less than 50 feet from the edge of wetland H_W13. Grading will be limited to the extend practical and appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation to the wetland. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
4	H_S24/ H_S24C/ H_W13	Holbrook Discharge	H3-A-1003	2.1	The additional temporary workspace is located less than 50 feet from the edge of waterbodies H_S24 and H_S24C, and Wetland H_W13. Due to this required workspace, a variance from the 50-foot waterbody/ wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a pipeline point of intersection and road crossing. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the waterbodies and wetland from the disturbed area.
5	H_W08	Holbrook Discharge	H3-A-1006	4.7	The additional temporary workspace is located less than 50 feet from the edge of wetland H_W08. The wetland is located within the additional temporary workspace. Due to this required workspace, a variance from the 50-foot wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a pipeline point of intersection and road crossing. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.

TABLE 2.2-7
VARIANCE TABLE

Variance Number	Stream/ Wetland ID	Discharge	Alignment Sheet Number	MP	Description
6	PE_W01	Perulack East Discharge	PU-A-1101	0.5	Additional construction ROW width greater than 75 feet is required at wetland H_W01. The proposed pipeline route and construction workspace has been designed to limit impacts to the wetland as practicable. An approximately 100-foot-wide construction ROW is requested to safely construct the pipeline within the existing ROW. This will provided enough useable space for the safe maneuvering of equipment, spoil storage including topsoil segregation, and the fabrication of pipeline while limiting impacts to the wetland. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
7	PE_W02/ PE_W03	Perulack East Discharge	PU-A-1103	2.7	Additional construction ROW width greater than 75 feet is required at wetlands PE_W02 and PE_W03. The proposed pipeline route and construction workspace has been designed to limit impacts to the wetlands as practicable. The construction ROW is requested to safely construct the pipeline within the existing ROW. This will provided enough useable space for the safe maneuvering of equipment, spoil storage including topsoil segregation, and the fabrication of pipeline while limiting impacts to the wetlands. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetlands from the disturbed area.
8	PE_W04	Perulack East Discharge	PU-A-1104	2.8	Additional construction ROW width greater than 75 feet is required at wetland PE_W04. The additional temporary workspace is located less than 50 feet from the edge of wetland The proposed pipeline route and construction workspace has been designed to limit impacts to the wetland as practicable. The construction ROW and additional temporary workspace is requested to safely construct the pipeline within the existing ROW. This will provided enough useable space for the safe maneuvering of equipment, spoil storage including topsoil segregation, and the fabrication of pipeline while limiting impacts to the wetland. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
9	PE_W07/ PE_S05	Perulack East Discharge	PU-A-1104	3.3	The additional temporary workspace is located less than 50 feet from the edge of wetland PE_W07 and waterbody PE_S05. Due to this required workspace, a variance from the 50-foot waterbody/ wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a pipeline point of intersection and road crossing. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the waterbody and wetland from the disturbed area.

TABLE 2.2-7
VARIANCE TABLE

Variance Number	Stream/ Wetland ID	Discharge	Alignment Sheet Number	MP	Description
10	PE_W05	Perulack East Discharge	PU-A-1104	3.3	The additional temporary workspace is located less than 50 feet from the edge of wetland PE_W05. Due to this required workspace, a variance from the 50-foot waterbody/ wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a pipeline point of intersection and road crossing. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
11	PW_W09	Perulack West Discharge	PU-A-1002	1.4	Additional construction ROW width greater than 75 feet is required at wetland PW_W09. The proposed pipeline route and construction workspace has been designed to limit impacts to the wetland as practicable. An approximately 100-foot-wide construction ROW is requested to safely construct the pipeline within the existing ROW. This will provided enough useable space for the safe maneuvering of equipment, spoil storage including topsoil segregation, and the fabrication of pipeline while limiting impacts to the wetland. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
12	SD_W01/ SD_W12/ SD_S01	Shermans Dale Discharge	S5-A-1001	0.1	The additional temporary workspace is located less than (and within) 50 feet from the edge of wetlands SD_W01 and SD_W12 and waterbody SD_S01. Due to this required workspace, a variance from the 50-foot wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a crossover of the pipeline. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the waterbody and wetlands from the disturbed area.
13	SD_W07	Shermans Dale Discharge	S5-A-1001	0.5	Additional construction ROW width greater than 75 feet is required at wetland SD_W07. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a pipeline point of intersection. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
14	SD_W29	Shermans Dale Discharge	S5-A-1005	4.5	The additional temporary workspace is located less than 50 feet from the edge of wetland SD_W29. The wetland is located within an additional temporary workspace. Due to this required workspace, a variance from the 50-foot wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to a pipeline point of intersection. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.

TABLE 2.2-7
VARIANCE TABLE

Variance Number	Stream/ Wetland ID	Discharge	Alignment Sheet Number	MP	Description
15	GE_W08	Grantville East Discharge	GE-A-1102	1.22	An additional temporary workspace of 70 feet by 325 feet is located less than 50 feet from the edge of wetland GE_W08. Due to this required workspace, a variance from the 50-foot wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, and the space necessary for both the combined wetland/waterbody crossing and road crossing. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
16	GE_S01	Grantville East Discharge	GE-A-1103	1.9	An additional temporary workspace is located less than 50 feet from the edge of the waterbody GE_S01. Due to this required workspace, a variance from the 50-foot waterbody buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, and the space necessary to complete the waterbody crossing in close proximity to a crossover of the pipeline. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the waterbody from the disturbed area.
17	GE_W02	Grantville East Discharge	GE-A-1103	2.1	Additional construction ROW width greater than 75 feet is required at wetland GE_W02. The proposed pipeline route and construction workspace has been designed to limit impacts to the wetland as practicable. An approximately 100-foot-wide construction ROW is requested to safely construct the pipeline within the existing ROW. This will provided enough useable space for the safe maneuvering of equipment, spoil storage including topsoil segregation, and the fabrication of pipeline while limiting impacts to the wetland. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
18	GE_W06	Grantville East Discharge	GE-A-1103	2.3	Additional construction ROW width greater than 75 feet is required at wetland GE_W06. The proposed pipeline route and construction workspace has been designed to limit impacts to the wetland as practicable. An approximately 100-foot-wide construction ROW is requested to safely construct the pipeline within the existing ROW. This will provided enough useable space for the safe maneuvering of equipment, spoil storage including topsoil segregation, and the fabrication of pipeline while limiting impacts to the wetland. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.

TABLE 2.2-7
VARIANCE TABLE

Variance Number	Stream/ Wetland ID	Discharge	Alignment Sheet Number	MP	Description
19	GE_S16	Grantville East Discharge	GE-A-1103	2.7	The construction ROW parallels waterbody GE_S16 and the edge of the temporary construction workspace is less than 15 feet from the edge of the waterbody. A variance from the 15-foot parallel buffer is required. The variance will provide enough useable, relatively level, space to fabricate the pipe sections, store excavated trench spoil, and to safely maneuver construction equipment. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the waterbody from the disturbed area.
20	GW_W03	Grantville West Discharge	GE-A-1001	0.1	The additional temporary workspace is located less than 50 feet from the edge of wetland GW_W03. Due to this required workspace, a variance from the 50-foot wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to Swatara Creek. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetland from the disturbed area.
21	GW_W07 and GW_W09	Grantville West Discharge	GE-A-1002	1.2	The additional temporary workspace is located less than 50 feet from the edge of wetlands GW_W07 and GW_W09. Due to this required workspace, a variance from the 50-foot wetland buffer restriction is required. This workspace is necessary to provide adequate space for safe maneuvering of equipment, spoil storage, and the fabrication of pipeline, which is in close proximity to Swatara Creek. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the wetlands from the disturbed area.
22	B_S02	Bernville Discharge	B3-A-1001	0.3	Waterbody B_S02 is located within the additional temporary workspace. The location of the additional temporary workspace is necessary to complete the work around the existing valve site. During construction an attempt to minimize disturbance to vegetation will be carried out to the extent practical. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the stream as practicable.
23	B_S03	Bernville Discharge	B3-A-1006	4.7	An additional temporary workspace of approximately 40 feet by 60 feet by 70 feet is located less than 50 feet from the edge of the waterbody, on the west side of the stream crossing. The close proximity of the work space is necessary for construction because of the combined wetland and waterbody crossing. The location of the additional workspace is to allow for practical spoil storage during the waterbody crossing and to keep the waterbody spoil out of the wetland. Appropriate erosion control structures will be installed and maintained throughout and following construction to control erosion and prevent sedimentation of the waterbody as practicable.

TABLE 2.3-1
WETLANDS CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Wetland Site ID	Approx. MP or Station	NWI Classification	PA Code Chapter 93 Design.*	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Desc.	Alignment Sheet Number
						Const. (feet^2)	Oper. (feet^2)		
Holbrook Loop									
H_W25	TAR 1.6	PEM	N/A	T	0	192	0	R	N/A
H_W24	TAR 1.6	PEM	N/A	T	0	1,659	0	R	N/A
H_W23	TAR 1.6	PEM	N/A	T	0	156	0	R	H3-A-1002
H_W01	1.7	PEM	N/A	T	62	3,641	0	R, Tr	H3-A-1002
H_W22	1.7	PEM	N/A	N/A	0	0	0	N/A	H3-A-1002
H_W02	1.7	PEM	N/A	N/A	0	0	0	N/A	H3-A-1002
H_W12	2.1	PEM	N/A	T	0	14	0	R	H3-A-1003
H_W13	2.2	PEM	N/A	T	194	9,305	0	R, Tr	H3-A-1003
H_W19	2.6	PEM	N/A	T	0	1,018	0	R, TR	H3-A-1003
H_W03	2.6	PEM	N/A	T	0	482	0	R, Tr	H3-A-1003
H_W06	3.8	PEM	N/A	T	0	286	0	R	H3-A-1004
H_W07	4.7	PEM	N/A	T	10	8,208	0	R, Tr	H3-A-1005
H_W08	4.8	PEM	N/A	T	0	1	0	R, Tr	H3-A-1005
H_W09	4.9	PEM	N/A	T	0	311	0	R, Tr	H3-A-1006
H_W10	5.3	PEM	N/A	T	0	226	0	R, Tr	H3-A-1005
H_W21	5.9	PEM	N/A	T	0	0	0	R	H3-A-1007
H_W04	5.9	PEM	N/A	T	0	863	0	R, Tr	H3-A-1007
H_W05	6.4	PEM	N/A	T	0	380	0	R	H3-A-1007
H_W20	PAR 6.6	PEM	N/A	T	0	111	0	R	N/A
Perulack West Loop									
PW_W09	1.4	PEM	N/A	T	32	1,963	0	R, Tr	PU-A-1002
PW_W06	1.5	PEM	N/A	T	121	4,333	0	R, Tr	PU-A-1002
PW_W08	1.5	PFO	N/A	N/A	0	0	0	N/A	PU-A-1002
PW_W05	1.5	PEM	N/A	T	22	106	0	R, Tr	PU-A-1002
PW_W07	1.5	PSS	N/A	T	0	0	0	N/A	PU-A-1002
PW_W04	1.6	PEM	N/A	T	47	1,502	0	R, Tr	PU-A-1002
PW_W03	1.81	PEM	N/A	N/A	0	0	0	N/A	PU-A-1002
PW_W02	1.8	PEM	N/A	T	0	3,317	0	Tr	PU-A-1002
PW_W01	1.8	PSS	N/A	T	0	895	0	R	PU-A-1002

TABLE 2.3-1
WETLANDS CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Wetland Site ID	Approx. MP or Station	NWI Classification	PA Code Chapter 93 Design.*	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Desc.	Alignment Sheet Number
						Const. (feet^2)	Oper. (feet^2)		
Perulack East Loop									
PE_W01	0.6	PEM	N/A	T	46	2,212	0	R, Tr	PU-A-1101
PE_W02	2.7	PEM	N/A	T	0	4,620	0	R	PU-A-1103
PE_W03	2.7	PEM	N/A	T	13	123	0	R, Tr	PU-A-1103
PE_W04	2.9	PEM	N/A	T	742	83,861	0	R, Tr	PU-A-1103
PE_W10	3.0	PEM	N/A	T	0	2,746	0	R	PU-A-1104
PE_W05	3.4	PEM	N/A	T	0	3,120	0	Tr	PU-A-1104
PE_W06	3.4	PEM	N/A	N/A	0	464	0	N/A	U-A-1104
PE_W07	3.4	PEM	N/A	T	27	915	0	R, Tr	U-A-1104
PE_W08	3.6	PEM	N/A	N/A	0	0	0	N/A	U-A-1104
PE_W09	3.7	PEM	N/A	T	0	1,235	0	R, Tr	U-A-1104
Shermans Dale Loop									
SD_W12	0.2	PEM	N/A	N/A	0	0	0	N/A	S5-A-1001
SD_W01	0.2	PEM	N/A	T	24	1,736	0	R, Tr	S5-A-1001
SD_W02	0.2	PEM	N/A	T	0	742	0	Tr	S5-A-1001
SD_W03	0.4	PEM	N/A	N/A	0	0	0	N/A	S5-A-1001
SD_W04	0.4	PEM	N/A	N/A	0	0	0	N/A	S5-A-1001
SD_W05	0.5	PEM	N/A	T	0	1,063	0	Tr	S5-A-1001
SD_W06	0.5	PEM	N/A	T	108	5,386	0	R, Tr	S5-A-1001
SD_W07	0.6	PSS	N/A	T	44	1,476	448	R, Tr	S5-A-1001
SD_W09	0.9	PEM	N/A	T	36	1,598	0	R, Tr	S5-A-1001
SD_W08	0.9	PEM	N/A	T	64	2,672	0	R, Tr	S5-A-1001
SD_W24	1.8	PEM	N/A	T	0	4,462	0	R, Tr	S5-A-1002
SD_W10	1.8	PFO	N/A	T	0	5,165	0	R, Tr	S5-A-1002
SD_W11	1.9	PFO/PEM	N/A	T	176	9,359	3,154	R, Tr	S5-A-1002
SD_W13	3.6	PEM	N/A	T	29	325	0	R, Tr	S5-A-1004
SD_W14	3.6	PEM	N/A	T	46	3,545	0	R, Tr	S5-A-1004
SD_W16	4.4	PEM	N/A	T	53	1,307	0	R, Tr	S5-A-1005
SD_W17	4.5	PEM	N/A	N/A	0	0	0	N/A	S5-A-1005
SD_W27	TAR 4.5	PEM	N/A	T	144	7,223	0	R	S5-A-1005
SD_W18	4.53	PEM	N/A	N/A	0	0	0	N/A	S5-A-1005
SD_W29	4.5	PFO/PEM	N/A	T	49	20,291	3,016	R, Tr	S5-A-1005
SD_W19	4.7	PEM	N/A	N/A	0	0	0	N/A	S5-A-1005

TABLE 2.3-1
WETLANDS CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Wetland Site ID	Approx. MP or Station	NWI Classification	PA Code Chapter 93 Design.*	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Desc.	Alignment Sheet Number
						Const. (feet^2)	Oper. (feet^2)		
SD_W30	4.7	PEM	N/A	T	55	1,724	0	R, Tr	S5-A-1005
SD_W20	4.7	PEM	N/A	N/A	0	0	0	N/A	S5-A-1005
SD_W31	4.8	PEM	N/A	T	19	524	0	R, Tr	S5-A-1006
SD_W15	4.9	PEM	N/A	T	6	829	0	R, Tr	S5-A-1006
SD_W32	5.5	PEM	N/A	T	4	363	0	R, Tr	S5-A-1006
SD_W21	5.5	PEM	N/A	T	33	2,491	0	N/A	S5-A-1006
SD_W26	TAR 5.8	PEM	N/A	T	0	370	0	R	N/A
SD_W22	5.9	PEM	N/A	T	12	777	0	R, Tr	S5-A-1007
SD_W23	6.4	PEM	N/A	T	0	12	0	N/A	S5-A-1007
Grantville West Loop									
GW_W01	PAR 0.0	PEM	N/A	N/A	0	0	0	N/A	N/A
GW_W02	PAR 0.0	PEM	N/A	T	0	1,125	0	Tr	N/A
GW_W03	0.1	PFO/PEM/PSS	N/A	T	529	24,706	17,926	R, Tr	GE-A-1001
GW_W10	0.7	PEM	N/A	T	21	3,543	0	R, Tr	GE-A-1001
GW_W12	1.1	PEM	N/A	T	98	3,738	0	R, Tr	GE-A-1002
GW_W06	1.20	PEM	N/A	N/A	0	0	0	N/A	GE-A-1002
GW_W07	1.3	PFO	N/A	T	414	20,239	9,880	Tr	GE-A-1002
GW_W11	TAR 1.4	PEM	N/A	T	0	214	0	R	GE-A-1002
GW_W09	1.5	PFO	N/A	T	403	21,434	8,761	Tr	GE-A-1002
GW_W08	1.6	PEM	N/A	T	31	1,641	0	Tr	GE-A-1002
GW_W04	2.3	PEM	N/A	T	16	905	0	R, Tr	GE-A-1003
GW_W05	2.4	PEM	N/A	T	0	15,775	0	Tr	GE-A-1003
Grantville East Loop									
GE_W03	0.4	PFO/PEM/PSS	N/A	T	197	11,673	5,297	R, Tr	GE-A-1101
GE_W04	0.5	PEM/PFO	N/A	T	583	20,405	0	R, Tr	GE-A-1101
GE_W05	0.6	PSS	N/A	T	13	1,704	1,326	R, Tr	GE-A-1101
GE_W08	1.2	PFO/PEM	N/A	T	251	12,818	6,273	R, Tr	GE-A-1102
GE_W01	2.1	PEM	N/A	N/A	0	0	0	N/A	GE-A-1103
GE_W02	2.2	PEM	N/A	T	321	23,796	0	R, Tr	GE-A-1103
GE_W07	2.4	PEM	N/A	N/A	0	0	0	N/A	GE-A-1103
GE_W06	2.4	PFO/PEM	N/A	T	549	35,334	11,924	R, Tr	GE-A-1103
GE_W09	2.5	PSS	N/A	T	0	1,096	0	R	GE-A-1103
GE_W10	2.6	PEM	N/A	N/A	0	0	0	N/A	GE-A-1103

TABLE 2.3-1
WETLANDS CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Wetland Site ID	Approx. MP or Station	NWI Classification	PA Code Chapter 93 Design.*	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Desc.	Alignment Sheet Number
						Const. (feet^2)	Oper. (feet^2)		
GE_W11	2.8	PSS	N/A	N/A	0	0	0	N/A	GE-A-1103
GE_W12	2.9	PEM	N/A	N/A	0	0	0	N/A	GE-A-1103
GE_W13	3.6	PEM	N/A	T	26	234	0	R, Tr	GE-A-1104
Bernville Loop									
B_W03	0.2	PEM	N/A	N/A	0	0	0	N/A	B3-A-1001
B_W01	4.8	PEM	N/A	T	0	66	0	R	B3-A-1005
B_W02	4.8	PEM	N/A	T	0	771	0	R, Tr	B3-A-1005
Uniontown Compressor Station									
UT_W01	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
UT_W03	N/A	PSS	N/A	N/A	0	0	0	N/A	N/A
Delmont Compressor Station									
Del_W01	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
Del_W02	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
Armagh Compressor Station									
Arm_W01	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
Entriken Compressor Station									
Ent_W01	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
National Pike Wareyard									
H_W14	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
H_W15	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
H_W16	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
H_W17	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
H_W18	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
Highway 119 Wareyard									
No wetlands found within the environmental study area.									
Flea Market Wareyard									
FMW_W01	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
FMW_W02	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
FMW_W03	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
Stone Quarry Wareyard									
No wetlands found within the environmental study area.									
Bottom Road Wareyard									
BRW_W10	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A

TABLE 2.3-1
WETLANDS CROSSED BY THE PROJECT SEGMENTS, COMPRESSOR STATIONS, AND WAREYARDS

Wetland Site ID	Approx. MP or Station	NWI Classification	PA Code Chapter 93 Design.*	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Desc.	Alignment Sheet Number
						Const. ($feet^2$)	Oper. ($feet^2$)		
Highway 22-1 Wareyard									
HWY22_W01	N/A	PEM	N/A	N/A	0	0	0	N/A	N/A
Highway 22-2 Wareyard									
No wetlands identified within the environmental study area.									
Highway 61 Wareyard									
No wetlands identified within the environmental study area.									
Doughten Road Wareyard									
No wetlands identified within the environmental study area.									
Prescott Drive Wareyard									
No wetlands identified within the environmental study area.									

LEGEND:

PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested

T = Temporary; P = Permanent

R = Temporary Road Crossing; Tr = Utility Line Trenching

NOTE:

* Designation is from the Pennsylvania Code (PA Code), 1979.

TABLE 2.3-2
WETLAND RESOURCES IDENTIFIED AT THE BI-DIRECTIONAL FLOW FACILITIES

Wetland Site ID	NWI Class.	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Description	Alignment Sheet Number
				Construction ($feet^2$)	Operation ($feet^2$)		
Uniontown Compressor Station							
Refer to Table 2.3-1.							
Holbrook Compressor Station							
HB_W01	PSS	N/A	0	0	0	N/A	N/A
HB_W02	PFO	N/A	0	0	0	N/A	N/A
Bern-Holbrook L&R MP 704.78							
No wetlands found within the environmental study area.							
Berne-Holbrook L&R MP 708.75							
Be-HB_L&R_W01	PEM	N/A	0	0	0	N/A	N/A
Be-HB_L&R_W02	PFO	N/A	0	0	0	N/A	N/A
Berne-Holbrook L&R MP 709.48							
No wetlands found within the environmental study area.							
Berne Compressor Station							
BE_W01	PEM	N/A	0	0	0	N/A	N/A
Athens-Bernville L&R MP 677.30							
No wetlands found within the environmental study area.							
Athens Compressor Station							
AT_W01	PEM	N/A	0	0	0	N/A	N/A
AT_W02	PEM	N/A	0	0	0	N/A	N/A
Wheelersburg-Athens L&R MP 611.65							
WB_AT_W01	PEM	N/A	0	0	0	N/A	N/A
Summerfield Compressor Station							
No wetlands found within the environmental study area.							
Somerset Compressor Station							
No wetlands found within the environmental study area.							
Five Points Compressor Station							
No wetlands found within the environmental study area.							
Wheelersburg Compressor Station							
No wetlands found within the environmental study area.							
Owingsville-Wheelersburg L&R MP 561.8							
OV_WB_W01	PSS	N/A	0	0	0	N/A	N/A

TABLE 2.3-2
WETLAND RESOURCES IDENTIFIED AT THE BI-DIRECTIONAL FLOW FACILITIES

Wetland Site ID	NWI Class.	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Description	Alignment Sheet Number
				Construction (feet^2)	Operation (feet^2)		
Owingsville Compressor Station							
OV_W01	PFO	N/A	0	0	0	N/A	N/A
OV_W02	PEM	N/A	0	0	0	N/A	N/A
Danville-Owingsville L&R MP 456.55							
No wetlands found within the environmental study area.							
Danville Compressor Station							
DV_W01	PEM	N/A	0	0	0	N/A	N/A
DV_W02	PEM	N/A	0	0	0	N/A	N/A
Tompkinsville-Danville L&R MP 397.61							
TV_DV_D&R_W01	PEM	N/A	0	0	0	N/A	N/A
Tompkinsville Station							
No wetlands found within the environmental study area.							
Gladeville-Tompkinsville L&R MP 306.10 Ln 25							
No wetlands found within the environmental study area.							
Gladeville Station							
No wetlands found within the environmental study area.							
Metering and Regulating 70315							
No wetlands found within the environmental study area.							
Metering and Regulating 73025							
No wetlands found within the environmental study area.							
Mt. Pleasant- Gladeville L&R MP 268.11							
No wetlands found within the environmental study area.							
Mt. Pleasant Station							
No wetlands found within the environmental study area.							
Barton- Mt. Pleasant L&R MP 185.03							
No wetlands found within the environmental study area.							
Barton Station							
No wetlands found within the environmental study area.							
Egypt- Barton L&R MP 115.40							
Egy_Bar_L&R_W01	PEM	N/A	0	0	0	N/A	N/A
Egypt Station							
No wetlands found within the environmental study area.							

TABLE 2.3-2
WETLAND RESOURCES IDENTIFIED AT THE BI-DIRECTIONAL FLOW FACILITIES

Wetland Site ID	NWI Class.	Impact Type	Wetland Crossing Length (feet)	Wetland Impact		Impact Description	Alignment Sheet Number
				Construction (feet^2)	Operation (feet^2)		
Kosciusko-Egypt L&R MP 42.00 Ln 30							
Kos_Egy_L&R_W01	PEM	N/A	0	0	0	N/A	N/A
Kosciusko-Egypt L&R MP 50.54 Ln 10							
No wetlands found within the environmental study area.							
Kosciusko Compressor Station							
Kos_W04	PEM	N/A	0	0	0	N/A	N/A
Kosciusko Pipeline Crossover							
Kos_W01	PEM	N/A	0	0	0	N/A	N/A
Kos_W02	PEM	T	0	2,827	1,357	B, Tr-D	N/A
Kos_W03	PEM	T	0	171	0	N/A	N/A
Clinton-Kosciusko L&R MP 359.46							
No wetlands found within the environmental study area.							
Clinton Station							
No wetlands found within the environmental study area.							
Union Church- Clinton L&R MP 290.51							
No wetlands found within the environmental study area.							
Union Church Station							
No wetlands found within the environmental study area.							

LEGEND:
PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; PFO = Palustrine Forested
T = Temporary; P = Permanent
R = Temporary Road Crossing; Tr = Utility Line Trenching

TABLE 2.3-3
TEAM 2014 WETLAND CROSSING SUMMARY

Pipeline/Facility Name	PEM Wetland	PSS Wetland	PFO Wetland	Total
Pipeline Segments				
Holbrook Loop	19	0	0	19
Perulack West Loop	6	2	1	9
Perulack East Loop	10	0	0	10
Shermans Dale Loop	26	1	3	30
Grantville West Loop	9	0	3	12
Grantville East Loop	7	3	3	13
Bernville Loop	3	0	0	3
Compressor Stations				
Uniontown Compressor Station	1	1	0	2
Delmont Compressor Station	2	0	0	2
Armagh Compressor Station	1	0	0	1
Entriken Compressor Station	1	0	0	1
Wareyards				
National Pike Wareyard	5	0	0	5
Highway 119 Wareyard	0	0	0	0
Flea Market Wareyard	3	0	0	3
Stone Quarry Wareyard	0	0	0	0
Bottom Road Wareyard	1	0	0	1
Highway 22-1 Wareyard	1	0	0	1
Highway 22-2 Wareyard	0	0	0	0
Highway 61 Wareyard	0	0	0	0
Doughten Road Wareyard	0	0	0	0
Prescott Drive Wareyard	0	0	0	0
Bi-Directional Flow Facilities				
Holbrook Compressor Station	0	1	1	2
Bern-Holbrook L/R MP 704.78	0	0	0	0
Bern-Holbrook L/R MP 708.75	1	0	1	2
Bern- Holbrook L/R MP 709.48	0	0	0	0
Berne Compressor Station	1	0	0	1
Athens-Bernville L/R MP 677.30	0	0	0	0
Athens Compressor Station	2	0	0	2
Wheelersburg-Athens L/R MP 611.65	1	0	0	1
Summerfield Compressor Station	0	0	0	0
Somerset Compressor Station	0	0	0	0

TABLE 2.3-3
TEAM 2014 WETLAND CROSSING SUMMARY

Pipeline/Facility Name	PEM Wetland	PSS Wetland	PFO Wetland	Total
Five Points Compressor Station	0	0	0	0
Wheelersburg Compressor Station	0	0	0	0
Owingsville-Wheelersburg L/R MP 561.8	0	1	0	1
Owingsville Compressor Station	1	0	1	2
Danville-Owingsville L/R MP 465.55	0	0	0	0
Danville Compressor Station	2	0	0	2
Tompkinsville-Danville L/R MP 397.61	1	0	0	1
Tompkinsville Compressor Station	0	0	0	0
Gladeville-Thompkinsville L/R MP 30.10 Ln 25	0	0	0	0
Gladeville Compressor Station	0	0	0	0
M&R 70315	0	0	0	0
M&R 73025	0	0	0	0
Mt. Pleasant-Gladeville L/R MP 268.11	0	0	0	0
Mount Pleasant Compressor Station	0	0	0	0
Barton- Mt. Pleasant L/R MP 185.03	0	0	0	0
Barton Compressor Station	0	0	0	0
Egypt- Barton L/R MP 115.40	1	0	0	1
Egypt Compressor Station	0	0	0	0
Kosciusko-Egypt L/R MP 42.00 Ln 30	1	0	0	1
Kosciusko-Egypt L/R MP 50.54 Ln 10	0	0	0	0
Kosciusko Compressor Station	1	0	0	1
Kosciusko Pipeline Crossover	3	0	0	3
Clinton-Kosciusko L/R MP 359.46	0	0	0	0
Clinton Compressor Station	0	0	0	0
Union Church- Clinton L/R MP 290.51	0	0	0	0
Union Church Station	0	0	0	0
Total	**110**	**9**	**13**	**132**

Note: In this table, wetlands with mixed NWI status are counted under whichever is dominant. For example, a PEM/PFO wetland, which is PEM dominant, is counted simply as PEM.