UNITED STATES ARMY CORPS OF ENGINEERS
PHILADELPHIA DISTRICT

DRAFT APPLICANT-PREPARED ENVIRONMENTAL ASSESSMENT

FOR THE

PENNEAST PIPELINE PROJECT CROSSING FEDERALLY-OWNED PROPERTIES ADMINISTERED BY THE UNITED STATES ARMY CORPS OF ENGINEERS (ASSOCIATED WITH BELTZVILLE LAKE)

May 2017

This page was intentionally left blank

Table of Contents

LIST OF TABLES

APPENDICES

LIST OF ACRONYMS

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AM	avoidance measure
APE	Area of Potential Effects
API	American Petroleum Institute
AQCR	Air Quality Control Region
ATWS	additional temporary workspace
BA	Biological Assessment
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of the Federal Regulations
CO	carbon monoxide
CO2	carbon dioxide
CWF	Coldwater Fishes
dBA	decibel
DBH	diameter at breast height
DCNR	Pennsylvania Department of Conservation and Natural Resources
DRBC	Delaware River Basin Commission
E&SCP	Erosion and Sediment Control Plan
EA	Environmental Assessment
EC	Engineering Circular
EI	Environmental Inspector
EIS	Environmental Impact Statement
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gases
HAP	hazardous air pollutant
HDD	horizontal directional drilling
HUC	Hydrologic Unit Code
IBA	Important Bird Area
IPAC	Information, Planning and Conservation
JPA	Joint Permit Application
L_{dn}	day-night average sound level
MBTA	Migratory Bird Treaty Act
MF	migratory fish
mg/L	milligrams per liter

MP	mile post
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHD	National Hydrography Datasets
NJ	New Jersey
NMFS	National Marine Fisheries Services
NOx	nitrogen oxides
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive areas
NSR	New Source Review
O&M	operations and maintenance
PA	Pennsylvania
PADEP	Pennsylvania Department of Environmental Protection
PaGWIS	Pennsylvania Groundwater Information System
PCB	polychlorinated biphenyl
PEM	palustrine emergent
PennEast	PennEast Pipeline Company, LLC
PFBC	Pennsylvania Fish and Boat Commission
PFO	palustrine forested
PGC	Pennsylvania Game Commission
PHMC	Pennsylvania Historical and Museum Commission
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
PM	particulate matter
PNDI	Pennsylvania Natural Diversity Inventory
PNHP	Pennsylvania Natural Heritage Program
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
Project	PennEast Pipeline Project
PSS	palustrine scrub-shrub
QIBS	Qualified Indiana Bat Surveyor
ROI	Region of Influence
ROW	right-of-way
RTE	Rare, threatened, and endangered
Rule	General Conformity Rule
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasure
SPPC	Spill Prevention and Pollution Control
T&E	threatened and endangered
U.S.	United States
UNT	unnamed tributary
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture

USDOI	United States Department of the Interior
US DOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compound

1.0 INTRODUCTION

This Draft Environmental Assessment (EA) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 as amended, to address the potential environmental impacts associated with the Project's proposed easement on Beltzville Lake and adjacent Federally-owned property administered by the United States Army Corps of Engineers (USACE's) Philadelphia District. The proposed Project would involve USACE approval of PennEast Pipeline Company, LLCs (PennEast) application for an easement allowing it to construct, install, and operate a portion (totaling approximately 1.06 miles) of the PennEast Pipeline Project (Project) that traverses land associated with Beltzville Lake and adjacent USACE-owned and administered property in Towamensing Township, Carbon County, Pennsylvania. Pursuant to 30 United States Code (USC) Section 185 (n), granting of this right-of way (ROW) easement is limited to a maximum of 30 years, subject to renewal by USACE.

The proposed modifications to Beltzville Lake are part of the larger PennEast Pipeline Project that extends beyond USACE's Beltzville Lake facility boundaries. Under Section 408, USACE has jurisdiction over specific Project activities that have the potential to alter USACE projects. Thus, the scope of analysis for the NEPA and environmental compliance evaluations for the Section 408 review are limited to the area of alterations at Beltzville Lake and adjacent USACE-owned and administered property.

To grant permission under Section 408, USACE must determine that the action/Project proposed to alter a USACE project does not impair the usefulness of the USACE project, which includes retaining the project's authorized purpose, and is not injurious to the public interest (Engineering Circular [EC] 1165-2-216, Section 7). The intent of Section 408 will be met by doing so. During this process, a determination will be made if USACE's higher headquarters review is required, and if so, a documented Section 408 decision will be issued pursuant to EC 1105-2-216. Factors that may be relevant are not limited to such things as conservation, historic properties, cultural resources, environmental impacts, water supply, water quality, flood hazards, flood plains, residual risk, and recreation. USACE's evaluation considers information received from the interested parties, including agencies, and the public.

1.1 Background

USACE has jurisdiction under 33 USC Section 408 only over the specific activities or portions of activities that have the potential to alter USACE projects (EC 1165-2-216, Section 7). Therefore, when a proposed alteration is part of a larger project (and/or its associated features) that extends beyond USACE project boundaries, USACE determines what portions or features of the larger project USACE has sufficient control and responsibilities over to warrant their inclusion in the environmental review process. The scope of analysis for the NEPA and environmental compliance evaluations for the Section 408 review, as they are presented in this document, are limited to the area of the alteration and those adjacent areas that are directly or indirectly affected by the alteration. For example, the Project extends for many miles on either side of the USACE project boundary at Beltzville Lake. In this case, the Section 408 scope of analysis would be limited to the effects of the pipeline within the USACE project boundary and would not address those portions of the pipeline beyond the USACE project boundary. Portions of the pipeline located outside of USACE-owned/administered properties, would be regulated by USACE only where and to the extent that the proposed pipeline would impact waters of the United States. NEPA and other environmental reviews for those proposed impacts will be evaluated through USACE's regulatory/permit process.

Consultation with the USACE regarding the Beltzville Lake Section 408 approvals was initiated in October 2014. Coordination continued for several months, and in July 2015, a pre-application meeting was held at the USACE Beltzville Lake facility to discuss the general project design, environmental survey status in the area, crossing methods, potential recreation and wildlife impacts, the Section 408

submittal application and review process, and the NEPA review process. PennEast submitted a Section 408 Application to the USACE on February 5, 2016 and supplemental information on March 16, 2016. An Application for Transportation and Utility Systems and Facilities on Federal Land was submitted to the Real Estate Division in June 2016. Coordination continued throughout 2016 and early 2017. On February 6, 2017 the USACE requested that PennEast provide an applicant-prepared EA for the Beltzville Lake crossing. In addition, Project planning activities have included coordination since 2014 with a number of other Federal and State agencies such as the Federal Energy Regulatory Commission (FERC), United States Fish and Wildlife Service (USFWS), United States Department of Agriculture (USDA), National Marine Fisheries Service (NMFS), Pennsylvania Department of Conservation and Natural Resources (DCNR), Pennsylvania Department of Environmental Protection (PADEP), Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Game Commission (PGC), Pennsylvania Historical and Museum Commission (PHMC), and the Delaware River Basin Commission (DRBC). Refer to Section 1.6 of this EA for additional details regarding the Project's coordination with federal and state environmental resource agencies, and Tribal consultations.

On April 21, 2016, the USACE issued a public notice to solicit comments from the public, Federal, State, and local agencies and officials, Indian Tribes, and other interested parties to consider and evaluate the impacts. The public notice was posted on the USACE website at: http://www.nap.usace.army.mil/Portals/39/docs/Civil/408/BZD_PN_April-21-2016.pdf.

1.2 Purpose and Need

The purpose of the Beltzville Lake crossing is to facilitate construction of the PennEast Pipeline Project's Mainline Route. The Mainline Route would entail the construction of approximately 116.0 miles of 36-inch diameter pipeline from Luzerne County, Pennsylvania, to Mercer County, New Jersey. The Mainline Route and associated Project facilities would provide approximately 1.1 million dekatherms per day of year-round natural gas transportation service from northern Pennsylvania to markets in eastern and southeastern Pennsylvania, New Jersey, and surrounding states.

The Project is designed to provide a long-term solution to bring the lowest cost natural gas available produced in northern Pennsylvania's Marcellus Shale region to homes and businesses in Pennsylvania, New Jersey, and surrounding states. The Project was developed in response to market demands in New Jersey and Pennsylvania, and interest from shippers that require transportation capacity to accommodate increased demand and greater reliability of natural gas in the region. The Project is designed to provide a new pipeline to serve markets in the region with firm, reliable access to the Marcellus supplies versus the traditional, more costly Gulf Coast regional supplies and pipeline pathways. An additional supply of natural gas to the region would provide a benefit to consumers, utilities, and electric generators by providing enhanced competition among suppliers and pipeline transportation providers. The Project would provide shippers additional opportunities to buy and sell supplies and to transport natural gas to where it is needed and valued most. The Project also offers shippers a reliable, short- haul transportation option for direct access to Marcellus Shale natural gas supplies absent several risks associated with long-haul pipelines originating and traversing other regions of the country.

1.3 Description of the Proposed Action

The Proposed Action involves USACE approval of an easement allowing construction, operation and maintenance of the Project on Federally-owned, USACE-administered land within and surrounding Beltzville Lake. The horizontal directional drill (HDD) method would be used to cross Wild Creek and Pohopoco Creek (collectively referred to as Beltzville Lake) and associated tributaries, wetlands, the surrounding forested uplands, and Beltzville State Park recreational facilities (i.e., trails). One single bore measuring approximately 6,100 feet in horizontal length would be utilized to cross these resources. The drill and intersect method would be utilized, resulting in two drill entry points. One drill entry point would be sited in workspace located in an open field within the eastern portion of Beltzville State Park's

boundaries. The second drill entry point and drill rig would be located on a parcel adjacent to and southeast of Beltzville State Park (outside of USACE-owned/administered property). Through use of a single HDD bore, impacts to both Wild Creek and Pohopoco Creek, as well as associated unnamed tributaries (UNTs), wetlands, upland forests, and Beltzville State Park recreational facilities would be avoided.

1.4 Project Location

The proposed Project's Mainline Route crosses Beltzville State Park between Mile Post (MP) 43.1 and MP 44.2 in Towamensing Township, Carbon County, Pennsylvania. Beltzville Lake is located within Beltzville State Park, which is a cooperative effort between the USACE, DCNR, and PGC. The USACE operates and maintains the Beltzville Dam while recreation is managed by DCNR under a lease agreement with the Pennsylvania Bureau of State Parks (USACE, 2014). The proposed Project would cross Wild Creek and Pohopoco Creek approximately 5.1 and 5.4 river miles upstream of the Beltzville Dam, respectively. Both Wild Creek and Pohopoco Creek are affected by the dam and are typically flooded at the proposed crossing location. A Project overview map is provided as Appendix A of this Environmental Assessment.

1.5 Project Construction

In general, the Project requires a 50-foot wide easement (permanent ROW) and an approximately 50-foot-wide temporary construction workspace for a 100-foot-wide construction corridor. Additional temporary workspace (ATWS) is required in some areas to support special construction techniques, such as for HDD. A Site-Specific Crossing Plan is provided as Appendix A that illustrates the temporary construction ROW, the permanent easement and ATWS at the proposed crossing of Beltzville Lake.

Construction of the Project through Beltzville State Park would include an approximate 372-foot long conventional trench through an upland field between MP 43.1 and 43.2. An approximate 1.2-mile long [6,100-feet in horizontal length] HDD would span from a 3.1-acre ATWS located in the upland field, under Beltzville State Park and Beltzville Lake, until exiting USACE property to the southeast. Of the total HDD crossing length, approximately 1.0 mile would span underneath USACE property at Beltzville Lake. The Proposed Action would cross Beltzville State Park and associated Beltzville Lake for a total length of 1.1 miles. HDD technologies would be employed to avoid impacts to sensitive resources including wetlands, waterbodies, surrounding forested uplands, and recreational areas.

The integrity of the pipeline would be tested using hydrostatic testing procedures before being placed into service. The pipeline would be filled with water and then pressurized to levels higher than the maximum operating pressure designated for the pipeline. The pressure test is held for a minimum of eight hours to be in compliance with United States Department of Transportation (USDOT) 49 CFR 192 regulations. HDD segments would be pre-tested aboveground before pulling into place, and then re-tested after being installed within the adjacent larger pipeline segments. Hydrostatic testing would be conducted by a certified and experienced contractor.

General restoration of the construction work area would be in accordance with the Project Erosion and Sediment Control Plan (E&SCP). Restoration measures would include the re-establishment of original grade and drainage patterns to the extent practicable. The site would immediately have topsoil restored, replaced, amended, seeded, and mulched. Additional information on the Project's E&SCP and site mitigation plans are provided in Section 3.7.2.

The timing for construction on USACE-administered property is dependent on the Project obtaining the necessary State and Federal approvals/permits and will be coordinated with USACE managers.

1.6 Agency Consultation

1.6.1 Rare, Threatened, and Endangered Species Consultation

This section summarizes the status of consultations with the USFWS, NMFS, DCNR, PFBC, and PGC pursuant to the Endangered Species Act (ESA) and to obtain information regarding state-listed rare, threatened and endangered species. Consultation with these agencies is generally related to the entire Project and not specific to the crossing of the Beltzville Lake crossing location (between MP 43.1 and 44.2). To the extent practical, Appendix D contains correspondence with these agencies that is specific to the crossing of the Beltzville Lake/USACE-managed properties. Appendix D excludes minor email exchanges, route updates that are not related to the subject crossing and the like. These resource agencies have each provided feedback throughout the Project development; they will each issue a final determination that will cover the entire Project, and will not issue a clearance/determination on a portion of the Project (such as this crossing). Section 3.5 of this EA further describes the Project's potential impacts and proposed mitigation measures on biological resources, including federally and state listed species.

U.S. Fish and Wildlife Service

AECOM initiated consultation with USFWS for the proposed Project on August 12, 2014; the USFWS responded to this request (USFWS Project No. 20141013) on September 30, 2104. On October 29, 2014, USFWS provided PennEast with adaptable management practices for conserving migratory birds and provided locations of known bald eagle nests located near the Project (one known bald eagle nest is located more than 4,000 feet from MP 43.1). These letters are included in Appendix D.

USFWS species of concern potentially located in the vicinity of Beltzville Lake include the Indiana bat, northern long-eared bat, northeastern bulrush, and bald eagle. On October 7, 2015, PennEast provided USFWS with reports of the survey results for each species and a USFWS Bald Eagle Project Screening Form. A summary of the survey status and results for the identified listed species are included in Table 5 of this EA.

Appendix D also contains correspondence from PennEast providing updated route alignments, which included the Beltzville Lake area, to the USFWS on March 30, 2015 and on December 17, 2015. Route updates not affecting this crossing were also provided to USFWS during 2015 and 2016.

In addition to written consultation and responses, meetings were held between PennEast representatives and USFWS (both in-person and via conference) calls during 2015, 2016, and are continuing in 2017. This ongoing coordination has included consultation and Project updates regarding surveys for federally listed species as well as the Draft Applicant Prepared Biological Assessment (BA) that was developed for the entire Project.

As noted above, coordination and consultation with the USFWS is ongoing. Once consultation is complete, AECOM anticipates USFWS would provide a letter indicating completion of ESA coordination for the proposed Project (a separate clearance letter for this crossing will not be issued). Upon receipt, AECOM will submit these documents to the USACE.

NOAA Marine Fisheries Services

AECOM initiated consultation with NMFS for the proposed Project on August 12, 2014, and NMFS responded to this request on September 18, 2014 (refer to Appendix D for both letters). Route updates

that included the area of this crossing were provided to NMFS on March 30, 2015 and December 17, 2015. Updated route alignments not affecting this crossing were provided to NMFS during 2015 and 2016. Response letters that addressed the entire Project were received from the NMFS in 2014 and 2015. NMFS did not list any species of concern potentially located in the vicinity of the Beltzville Lake project area during consultations.

Pennsylvania Department of Conservation and Natural Resources

AECOM initiated consultation with DCNR, Bureau of Forestry on August 12, 2014; DCNR responded on September 17, 2014 (refer to Appendix D for a copy of both correspondences). In addition, an introductory meeting occurred in November of 2014 to introduce the Project to Pennsylvania resource agencies (including DCNR and PFBC) following the initial written correspondence. Appendix D contains correspondence from PennEast providing an updated route alignment that included the area of this crossing to the DCNR on March 30, 2015 and the DCNR issued a response on April 6, 2015. Another route updated that included the area of this crossing was provided to DCNR on December 17, 2016, and the DCNR provided a response in a letter dated January 16, 2016. DCNR indicated rare plants potentially located within the vicinity of Beltzville Lake include wild bleeding heart, matted spike rush, and sweet gale.

Much of the correspondence to and from the DCNR has been related to PennEast's State Forest Environmental Review and focuses on Pennsylvania State Parks and Pennsylvania State Forests crossed by the Project, which includes Beltzville State Park. The DCNR provided a summary of initial concerns for a pre-survey meeting March 18, 2015. On April 8, 2015, DCNR issued PennEast a "Certificate to Survey" within State Forest and State Park lands, including Beltzville State Park.

Survey results for rare plant species identified by the DCNR were provided on October 7, 2015 (refer to Appendix D); these species were not found in the vicinity of the Beltzville Lake crossing. DCNR responded to the survey results on October 22, 2015 by providing recommendations (by species) for avoidance and/or mitigation measures for the Project.

Route updates not affecting this crossing were provided to DCNR in 2015 and 2016. As applicable, additional consultation was requested of DCNR to address the routing updates, and DCNR provided responses to those requests during 2015, 2016, and 2017. In addition to written correspondence, DCNR and PennEast have also conducted meetings and conference calls to discuss the agency's concerns and the potential impacts from the Project on state forest and park lands.

Coordination and consultation with DCNR is ongoing; no species or resources under DCNR's jurisdiction occur in the vicinity of the Beltzville Lake crossing. Once consultation is complete, AECOM anticipates DCNR will provide a letter indicating completion of coordination for the entire proposed Project. Upon receipt, AECOM will submit these documents to the USACE.

Pennsylvania Fish and Boat Commission

AECOM initiated consultation with PFBC for the proposed Project on August 12, 2014; PFBC responded to this consultation on September 8, 2014 (refer to Appendix D for these letters). Appendix D also contains correspondence providing an updated route alignment to the PFBC on March 30, 2015 as well as the PFBC's response on April 22, 2015. An additional updated route alignment that contains the area of the Beltzville Lake crossing was provided to PFBC on December 17, 2015. In a January 5, 2016 response, the PFBC indicated that the deviation in the vicinity of the Beltzville Lake crossing (between

MP 43.95 and 44.55) did not contain any species of special concern under PFBC jurisdiction.

PennEast conducted species-specific surveys in response to PFBC-identified concerns along other areas of the proposed pipeline route. PennEast issued reports of the survey results to PFBC in the fall of 2015 and supplemented the surveys and reports in the summer of 2016; however, these were not applicable to the area of this crossing.

Once consultation is complete, AECOM anticipates PFBC would provide a letter indicating completion of coordination for the entire proposed Project. Once this documentation is received, AECOM will submit these documents to the USACE.

Pennsylvania Game Commission

AECOM initiated consultation with PGC for the proposed PennEast Project on August 12, 2014, and PGC responded to this request on September 24, 2014 (PGC ID No. 2014081900001); refer to Appendix D for copies of these correspondences. PennEast also met with PGC in September of 2014 to follow-up on the initial correspondence, introduce the Project to the agency, and obtain additional feedback. On March 30, 2015, PennEast advised PGC of a proposed route alignment (that included the area of the proposed crossing), and a response was received on May 5, 2015. An additional route update was provided on December 17, 2015. PGC did not request species-specific concerns in the area of this crossing. PennEast conducted species-specific surveys in response to PGC-identified concerns along other areas of the proposed pipeline route. These survey results were provided to PGC in the fall of 2015 and were supplemented as needed.

Coordination and consultation with the PGC is ongoing. Once consultation is complete, AECOM anticipates PGC would provide a letter indicating completion of coordination for the entire proposed Project. Once received, AECOM will submit these documents to the USACE.

1.6.2 Cultural Resources Consultation

The following sections provide an overview of the consultation between PennEast and the Pennsylvania State Historic Preservation Office and between PennEast and federally recognized Indian Tribes with historic ties to the area crossed by the Project. This section again aims to focus on the crossing near the Beltzville Lake crossing, although much of this ongoing consultation occurs for the Project as a whole. Refer to Section 3.6 for additional information on potential impacts on archeological and historic resources, as well as proposed mitigation measures.

Overview of Pennsylvania State Historic Preservation Office Consultation

On August, 20, 2014, PennEast submitted a detailed scoping letter to the Pennsylvania State Historic Preservation Office (PA SHPO, formerly the Bureau for Historic Preservation of the Pennsylvania Historical and Museum Commission) that included Project mapping, reviewed the results of preliminary background research, and outlined the proposed methodology for identification-level archaeological and architectural history surveys for the project. The scoping letter also included an Unanticipated Discovery Plan (UDP) guiding the treatment of human remains and archaeological sites that might be discovered during Project construction. The PA SHPO concurred with the survey methodologies and the UDP in a letter dated September 10, 2014 (refer to Appendix D for these correspondences).

PennEast notified the PA SHPO of Project reroutes that included route changes at Beltzville Lake

Crossing on March 31, 2015, and the PA SHPO issued a response in a letter dated April 22, 2015. The PA SHPO did not respond to the December 17, 2015 submittal, which contained updates to the proposed route, including an update in the vicinity of the Beltzville Lake Crossing. These transmittals included electronic shapefiles and maps of the reroutes.

Areas covered by Phase I archaeological survey at Beltzville Reservoir were reported to the PA SHPO in two separate reports. Desktop review by PennEast indicated that no historic architectural resources were present within the Project's area of potential effects (APE) on USACE holdings at Beltzville Reservoir. The document entitled *Phase I Archaeological Survey Report, PennEast Pipeline Project, Luzerne, Carbon, Northampton, and Bucks Counties, Pennsylvania* was submitted to the PA SHPO on September 24, 2015. No archaeological sites were identified on USACE holdings at Beltzville Reservoir. The PA SHPO responded to this submittal by letter dated October 22, 2015, concurring with the report's recommendations. The document entitled *Phase I Archaeological Survey Report, PennEast Pipeline Project, Luzerne, Carbon, Northampton, and Bucks Counties, Pennsylvania, Addendum 1* was submitted to the PA SHPO on March 18, 2016. No archaeological sites were identified on USACE holdings at Beltzville Reservoir. The PA SHPO commented on the report in a letter dated April 14, 2016 (included in Appendix D).

Overview of Tribal Coordination

On December 31, 2014, PennEast sent letters to 15 federally recognized Indian Tribes (Tribes) with historic ties to the area crossed by the Project (included within Appendix D). Tribal leaders and Tribal Historic Preservation Officers (THPOs) were identified using the Bureau of Indian Affairs Tribal Leaders Directory (2014), the National Association of Tribal Historic Preservation Officers (n.d.), and on-line research. The letters introduced the Project and provided detailed mapping of the proposed alignment. PennEast subsequently followed up the initial contacts with phone calls to individuals and/or tribes that did not respond to the letters. PennEast engaged in this additional coordination via email, telephone, and mail with tribes that expressed interest in the Project. The Tribes contacted for the Project are listed below along with a brief summary of coordination status. FERC sent consultation letters to these 15 Tribes on June 22 and 23, 2015, but has not received any responses to date.

Tribe	Coordination Status
Absentee-Shawnee Tribe of Indians of Oklahoma	No response after three attempts
Cayuga Nation	No response after three attempts
Delaware Nation	Coordination ongoing
Delaware Tribe of Indians	Coordination ongoing
Eastern Shawnee Tribe of Oklahoma	No response after three attempts
Oneida Indian Nation	Coordination ongoing
Oneida Nation of Wisconsin	No response after two attempts
Onondaga Nation	No response after two attempts
Seneca Nation of Indians	Coordination ongoing
Seneca-Cayuga Tribe of Oklahoma	No response after two attempts
Shawnee Tribe	No concerns with Project
St. Regis Mohawk Tribe	Coordination ongoing
Stockbridge-Munsee Band of Mohicans	Coordination ongoing
Tonawanda Seneca Nation	No response after two attempts
Tuscarora Nation	No response after two attempts

PennEast continues to request the comments of the six responding tribes on route changes. None of the responding Tribes have specifically identified USACE holdings at Beltzville Reservoir as areas of concern. As requested by three of the Tribes (Delaware Tribe of Indians, Oneida Indian Nation, Stockbridge-Munsee Band of Mohicans), PennEast has submitted all archaeological survey reports for the Project to those Tribes for review. No comments on the reports have been received that express concerns with USACE holdings at Beltzville Reservoir.

1.6.3 Delaware River Basin Commission

PennEast initiated consultation with the Delaware River Basin Commission (DRBC) in August 2014. From this initial outreach, PennEast has advised the DRBC of route updates, including the updates on March 30, 2015 and December 17, 2015. DRBC provided a written reply to the introductory material in November 14, 2014. Additional route updates were provided to DRBC that did not involve the crossing of the Francis E. Walter Reservoir.

In addition to written correspondence, PennEast and DRBC representatives have held meetings (both in person and via conference call) to facilitate coordination regarding the Project.

PennEast submitted its application to DRBC in February of 2016. Supplemental information was provided to DRBC in March, July, and October 2016, and May 2017.

Consultation with the DRBC is ongoing. DRBC is reviewing the entire Project and will issue a permit decision upon completion of their review. Once received, AECOM will submit these documents to the USACE.

2.0 ALTERNATIVES CONSIDERED

A number of alternatives were considered based on input from local, county, and township officials. Comments and concerns from individual landowners and members of the general public have been taken into account. Necessary adjustments to the route were also made to account for engineering, environmental, and land use constraints that were identified during the environmental survey process.

Existing utility corridors (natural gas pipelines, liquid pipelines, electric transmission, water, and sewer) were also examined to identify potential areas where the proposed pipeline could parallel or be co-located within existing maintained ROWs. This assessment found that some of these ROWs had been encroached upon by residential and commercial development resulting in inadequate space for the staging and construction of an additional pipeline between the existing facilities and the neighboring developments. Where environmental impacts were not greater, the Project was aligned with as many existing utility corridors as possible to ensure the Project can be safely constructed and operated and satisfy the Project customers' demands.

In addition to these overall routing strategies, several alternatives at Beltzville Lake were considered including the No Action Alternative, an open cut dry crossing, and HDD. The sections below describe the alternatives considered at the Beltzville Lake crossing.

2.1 No Action Alternative

In accordance with USACE EC 1165-2-216, 7(c)(3)(c)(v), "reasonable alternatives must be those that are feasible, and such feasibility must focus on the accomplishment of the underlying purpose and need (of the requester) that would be satisfied by the proposed Federal action (granting of permission for the alteration). For Section 408 requests, reasonable alternatives should focus on two scenarios: 1) No Action and 2) Action.

Under the No Action Alternative, the proposed Project would not be constructed on USACE-owned/administered property at Beltzville Lake. Under this scenario, the Project shippers' need for the firm transportation capacity would not be met unless the Project was routed to avoid USACE properties.

Alternative alignments that avoided Beltzville Lake were evaluated, but the routes were not practicable based on a variety of factors. One of the major alternatives evaluated was the Transco Leidy Line Alternative Route, which would loop Transco's Leidy Line pipeline system and avoid Beltzville Lake. A loop of Transco's Leidy Line would access the same production region that the Project accesses; however, the Transco Leidy Line would not offer the same access to specific delivery point locations provided by the Project. Therefore, pipeline laterals would need to be built from the looped pipeline to the delivery points to meet the Project's purpose and need. Implementing the Transco-Leidy Alternative would result in approximately 40.6 miles of additional pipeline laterals to access the delivery points, which would result in greater environmental and residential impacts. Other alternatives that would avoid the USACE properties associated with Beltzville Lake were also evaluated, each of which would result in a substantial increase in greenfield construction through forested conservation land north of Beltzville Lake. The proposed alignment co-locates with existing utility rights-of-way, roads, and other previously-disturbed areas to the extent practicable, which minimizes adverse environmental and community impacts.

The No Action Alternative would avoid Project-related environmental impacts on USACE-owned/administered Beltzville Lake, but would likely result in potentially greater adverse impacts on aesthetics, biological resources, floodplains and wetlands, recreational uses, traffic, and health and safety impacts if the Project were rerouted to avoid crossing Beltzville Lake.

While the No Action Alternative would not preclude PennEast from finding alternative routes to provide additional natural gas transport services, reroutes around Beltzville Lake would not represent the least environmentally damaging practicable alternative. Alignments around Beltzville Lake would likely involve more environmental impacts associated with cutting more forested and undisturbed areas, stream crossings, and developed residential areas. Although the No Action Alternative would perpetuate the status quo on Federal property, other off-site alternatives are expected to result in more environmental impacts. Accordingly, the No Action Alternative was not considered viable and was eliminated from further consideration.

2.2 Preferred Alternative

Since the Project was initiated in the spring of 2014, several crossing method alternatives have been reviewed and evaluated at the proposed Beltzville Lake crossing. Key alternatives include: 1) Open cut dry crossing (coffer dam); 2) Two shorter HDDs, one for each waterbody crossing; and 3) One single HDD spanning across both Wild Creek and Pohopoco Creek. The following sections address the key alternatives assessed.

2.2.1 Alternative 1 – Open Cut Dry Crossings

Open cut dry construction methods were evaluated for crossing both Wild Creek and Pohopoco Creek. Because both streams are considered major waterbodies (greater than 100 feet wide), the traditional flume and dam and pump crossing methods were not evaluated for the Proposed Action. Flume and dam and pump crossing methods are generally only suitable for minor and intermediate waterbody crossings (less than 100 feet wide). Instead, the use of a cofferdam to construct the pipeline across Beltzville Lake was evaluated.

Cofferdams can be constructed within waterbodies to isolate workspace by diverting all stream flow to one side of the waterbody. Generally the cofferdam (such as a Portadam® or other braced cofferdams) is constructed across half of the channel width and the enclosed area is dewatered. Once the area has been dewatered, backhoes located on the banks or within the enclosed area excavate the trench. The trench

spoil is generally stored in the dry stream bed. A prefabricated pipe segment is installed in the trench, and the trench is immediately backfilled with streambed spoil. Upon restoring the streambed, the cofferdam is removed. The process is then replicated on the other side of the stream.

Although this method effectively isolates the workspace from the stream, construction results in direct, temporary impacts to waterbodies and adjacent uplands. To access the waterbodies, the Project would require a 50-foot-wide permanent ROW and, on average, an approximately 50-foot-wide temporary construction workspace for a 100-foot-wide construction corridor. Forested land within Beltzville State Park would need to be cleared within the ROW and environmentally sensitive areas, such as wetlands, may be impacted. The installation of sediment barriers on adjacent uplands and other erosion and sediment control best management practices (BMPs) greatly reduce sedimentation; however, earth disturbance within and near waterbodies increases the risk of sedimentation during storm events.

The open cut waterbody crossings would also result in temporary impacts to wildlife and recreational activities in this portion of Beltzville State Park. Wildlife would be temporarily displaced by construction activities, and access to park visitors would be limited near the construction workspace due to safety concerns. A cofferdam would also limit recreational boating and fishing during construction of the crossings. Because of the impacts to recreational areas and various habitats, the open cut method is not a preferred alternative.

2.2.2 Horizontal Directional Drilling

Two different HDD approaches to cross Beltzville Lake were evaluated: 1) Two shorter HDDs, one for each waterbody crossing; and 2) One long HDD spanning under both Wild Creek and Pohopoco Creek.

Horizontal directional drilling is an advanced boring method where a small diameter hole, or pilot hole, is drilled along a predetermined design path. The pilot hole is then gradually enlarged until it is sufficient to accommodate the pipeline being installed. The pipeline may or may not be installed concurrently with the hole enlargement, depending upon the final diameter of the enlarged hole and the soil conditions encountered. Excavation of the drill entry locations would be necessary to contain drilling fluids during all phases of the installation. These fluids and cuttings must be disposed of in an approved manner periodically or at the completion of the crossing installation. The crossing length and cross-sectional geometry are dependent upon the pipeline design parameters, obstacles crossed, and subsurface conditions.

The HDD process can take several weeks to months depending on the length of the bore and site conditions. Additionally, there is risk that an inadvertent return of drilling mud may result in unanticipated impacts along the length of the bore or in adjacent areas. Typically, the drilling mud is contained within the borehole and the return pit next to the drill rig. However, in some instances, the pressure necessary to sustain adequate fluid pressure at the high point creates too high of a pressure at the low point, resulting in “fracturing” of shallow formations and unanticipated releases to the surface at unconsolidated locations. The result is a release of drilling fluid at the surface. This release often occurs within a streambed, because it is the low point of the drill, and streambeds in northeastern Pennsylvania are generally comprised of unconsolidated alluvium and glacial till.

Geotechnical studies at Beltzville Lake were conducted to evaluate the underlying substrate along the proposed HDD and the probability of an unanticipated release. The study results suggest that the risk of an unanticipated release of drilling fluid along the bore alignment is low. Using HDD technology would allow the pipeline to be constructed without surface impacts over the length of the bore so direct impacts to wetlands, waterbodies, and forested areas would be avoided. ATWS, including pipe staging areas and storage areas for drilling mud and borehole cuttings, would be sited in an upland area within Beltzville State Park outside of wetlands, riparian zones, and forested areas. As a result, the environmental benefits that the trenchless technology provides make HDD the preferred construction alternative.

2.2.3 Alternative 2 – Two Shorter HDD Crossings

Two shorter HDDs to cross Beltzville Lake were considered (i.e., one bore for each stream crossed). Under this alternative, the two HDDs would share a bore pad sited between Wild Creek and Pohopoco Creek, adjacent to Penn Forest Road South in Beltzville State Park. The first bore would span from a partially forested and partially open area west of Christman Trail, under Wild Creek, to the shared bore pad. The second HDD would span from the shared bore pad, under Pohopoco Creek, to its exit point on a property southeast of USACE land.

Although this alternative allows for shorter drilling lengths, under this option the pipeline would be installed adjacent to an existing waterline owned by the Bethlehem Authority. Due to the age and condition of the existing waterline, the Bethlehem Authority has expressed concern for the proximity of the proposed Project. Additionally, forested land would need to be temporarily cleared within the ROW to construct bore pads for this alternative. Wildlife would be temporarily displaced until these forested areas were able to revegetate. In addition, park visitors' access to Christman Trail would be limited near construction workspaces to address safety concerns.

Because of impacts to forested resources, Beltzville State Park's recreational areas, and the proximity to the Bethlehem Authority's existing waterline, constructing two individual HDDs is not a preferred alternative.

2.2.4 Alternative 3 – One Long HDD Crossing (Proposed Action)

Constructing one long bore that would span across both Wild Creek and Pohopoco Creek was considered, which would have eliminated the shared bore pad between the two waterbodies. The HDD entry point would be sited within the same open field as Alternative 2; however, the ATWS would be sited in the middle of the field eliminating impacts to upland forests. Because construction workspace would be located further from the forest edge, the Christman Trail would also be unaffected by construction. This approach is consistent with the USACE and DCNR's request to protect the recreational qualities of Beltzville State Park and Beltzville Lake. In addition, construction of one long HDD would permit approximately 160 feet of vertical separation between the Bethlehem Authority's existing waterline and the PennEast pipeline. This scenario would provide sufficient insulation to protect the integrity of both the proposed PennEast pipeline and the Bethlehem Authority's waterline.

Crossing Beltzville Lake using a single HDD minimizes impacts to various resources including forested habitat, recreational areas, and Bethlehem Authority's waterline. Based on the various evaluations performed, the crossing location and method outlined in Alternative 3 is the preferred option for crossing Beltzville Lake. Hereinafter, Alternative 3 is referred to as the Proposed Action.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

For purposes of this EA, environmental impacts described as temporary are those that are short-term in nature (i.e., during construction) whereas permanent impacts would occur over the long-term (i.e., during the operational life of the Project). Environmental impacts discussed as minimal are equivalent to impacts that are considered minor, and impacts described as adverse are equivalent to impacts that may be considered moderate or significant. The terms "effects" and "impacts" are also used synonymously throughout this EA.

3.1 Geology/Soils

3.1.1 Affected Environment

Geology

The Proposed Action area on Beltzville Lake and surrounding USACE-owned/administered property is located in the Blue Mountain Section within the Ridge and Valley Physiographic Province of Pennsylvania (DCNR, 2000). The Blue Mountain Section is topographically dominated by linear ridges to the south and valleys to the north. The valley in this province widens eastward and includes low linear ridges and shallow valleys. The underlying rock type in the Blue Mountain Section is sandstone, siltstone, and shale with some limestone and conglomerate. A portion of the Project ROW would be located adjacent to another utility corridor and no know geological hazards would be encountered. Based on review of the Pennsylvania Natural Heritage Program (PNHP) and Pennsylvania Natural Diversity Inventory (PNDI) databases, no unique and unusual geologic sites and features are located within the Proposed Action area on Beltzville State Park. Therefore, no listed unique or unusual geologic sites are located within the Project ROW on USACE-owned property at Beltzville Lake.

Soils

Shallow Depth to Bedrock

Published information regarding geological conditions for the specific Project locations was obtained from the United States Geological Survey (USGS) and the DCNR. The depth to bedrock in the Proposed Action area ranges from 10 to 60 inches in depth. Table 1 lists the approximate depths to bedrock on USACE-owned/administered property at Beltzville Lake. Shallow bedrock may be encountered along much of the Proposed Action area ROW, but only 372 linear feet of the pipeline will be installed using conventional trenching techniques, where shallow bedrock could affect excavation methods. As such, some rock removal may be required in the Proposed Action area. Rock encountered during construction of the pipeline will be removed using one of the available rock removal techniques:

- Conventional excavation with a backhoe;
- Ripping with a bulldozer followed by backhoe excavation;
- Pneumatic hammering followed by backhoe excavation;
- Blasting surface rock followed by backhoe excavation; and
- Blasting subsurface (if necessary) rock prior to backhoe excavation.

If blasting is necessary, the blasting technique selected would depend on the relative hardness, fracture susceptibility, expected volume, and the specifics of the location.

All blasting activity will be performed according to Federal and State safety standards and in accordance with the Project's comprehensive Blasting Plan to be implemented by a certified blasting contractor. The

blasting configurations are sized and positioned so that they can direct the impact to avoid and/or minimize impacts outside of the construction work area.

Susceptibility to Erosion

Soil erosion and sedimentation are potential impacts from pipeline construction. Wind erosion is common in regions of low rainfall and is increased by removing or reducing the vegetative cover. Water erosion is the dislocation of soil particles by falling water and their subsequent movement by flowing water. Water erosion is influenced by ground cover and slope gradient.

Table 2 provides the erosion potential of each soil map unit crossed by the Proposed Action area. Earth disturbance will only occur within the Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded map unit, which has a moderate erosion potential. The use of appropriate erosion control measures will be employed, as described in the E&SCP, to minimize potential impacts due to erosion. Therefore, implementation of the Proposed Action would not result in significant erosion problems from high-risk soils.

Susceptibility to Soil Compaction

Compaction-prone soils include those that have a clay loam or finer USDA texture classification and have a drainage class of somewhat poorly drained to very poorly drained. Soil characteristics that affect soil compaction include soil texture, soil moisture, grain size distribution, and porosity. Soil compaction has a restrictive action on water penetration, root development, and the rate of diffusion of oxygen into soils. Compaction has the effect of reducing yields of most agricultural crops and can inhibit revegetation. As shown in Table 2, the Proposed Action area crosses soils that are low to moderately prone to compaction. Earth disturbance will only occur within the Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded map unit, which is a somewhat excessively drained soil with low compaction potential. Steps will be taken to mitigate the potential for soil compaction, such as segregating topsoil from subsoil during construction, plowing subsoil before replacing the segregated topsoil and, as necessary, using a paraplow or other deep tillage implement in severely compacted areas.

Prime Farmland Soils

Based on a review of the National Resource Conservation Service (NRCS) soils database, the Project ROW within USACE-owned/administered property at Beltzville Lake includes soils designated as prime farmland and farmland of state-wide importance. Table 2 summarizes the farmland soil designations across the proposed Project ROW within USACE administered properties. These soils have an optimal combination of physical and chemical characteristics best suited for agricultural uses, including the production of food, feed, forage, fiber, and oilseed crops. At Beltzville Lake, prime farmland soils are either forested or preserved as open space providing the public with recreational opportunities. Earth disturbance will only occur within the Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded map unit, which is farmland of state-wide importance.

The majority of Beltzville State Park and Beltzville Lake would be crossed via HDD, and as a result, impacts to prime farmland soils would largely be avoided. Approximately 3.05 acres of farmland of state-wide important designated soils would be temporarily disturbed on Beltzville State Park adjacent to Pohopoco Drive to install the pipeline and construct an HDD bore pad. Best management practices, including topsoil segregation, stone removal, soil de-compaction, and compliance with re-seeding specifications will be employed to ensure that proper restoration of impacted prime farmland soils occurs.

Table 1: Shallow Depth to Bedrock Crossed by the Pipeline

Begin MP [1]	End MP [1]	Soil Type	Minimum Depth to Bedrock [2] (in)	Length of Pipe in Rock [3] (ft)	(mi)
43.1	43.3	Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded	10	1,407	0.3
43.3	43.4	Montevallo channery silt loam, 8 to 15 percent slopes, moderately eroded	10	310	0.1
43.4	43.5	Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded	10	465	0.1
43.5	43.5	Montevallo channery silt loam, 25 to 35 percent slopes, moderately eroded	10	167	0.0
43.5	43.5	Middlebury silt loam, 3 to 8 percent slopes	60	18	0.0
43.5	43.6	Water	10	180	0.0
43.6	43.6	Montevallo channery silt loam, 25 to 35 percent slopes, moderately eroded	10	127	0.0
43.6	43.6	Hartleton channery silt loam, 3 to 8 percent slopes, moderately eroded	40	339	0.1
43.6	43.8	Hartleton channery silt loam, 0 to 3 percent slopes	40	853	0.2
43.8	43.8	Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded	10	155	0.0
43.8	44.0	Montevallo channery silt loam, 15 to 25 percent slopes, moderately eroded	10	715	0.1
44.0	44.0	Water	10	390	0.1
44.0	44.1	Montevallo channery silt loam, 15 to 25 percent slopes, moderately eroded	10	416	0.1

Notes:
Source: The mainline pipeline and laterals were divided into segments demarcated by the mapped boundaries between the soil series according to their coordinates in the SSURGO database. Expected Minimum Depths to bedrock were derived from the National Resource Conservation Service's (NRCS) Official Soil Series Descriptions (OSD), which are available online. Where lacking or incomplete, additional depth information was obtained from the county soil surveys for Bucks, Carbon, Luzerne, and Northampton Counties, Pennsylvania and Hunterdon and Mercer Counties, New Jersey. Various areas crossed that were not assignable to soil series (e.g. strip mine, mine dump, mine wash, urban land, water, alluvial land, fluvaquents, and udorthents) were assigned values based on expected depths associated with land use, considering location, topography, and adjacent soils. The online and published sources of information are:
- Soil Survey Staff, Natural Resources Conservation Service, and United States Department of Agriculture. Official Soil Series Descriptions. Available online. Accessed September 9, 2015. [http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/survey/class/data/]

- U.S. Dept. of Agriculture 1962. Soil Survey of Carbon County, Pennsylvania. Soil Conservation Service. Series 1959, No. 14. 106 p. + maps.
- U.S. Dept. of Agriculture 1972. Soil Survey of Mercer County, New Jersey. Soil Conservation Service. 108 p. + maps.
- U.S. Dept. of Agriculture 1974. Soil Survey of Northampton County, Pennsylvania. Soil Conservation Service. 120 p. + maps.
- U.S. Dept. of Agriculture 1974 (Re-issued 1981). Soil Survey of Hunterdon County, New Jersey. Soil Conservation Service. 131 p. + maps.
- U.S. Dept. of Agriculture 1975. Soil Survey of Bucks and Philadelphia Counties, Pennsylvania. Soil Conservation Service. 130 p. + maps.
- U.S. Dept. of Agriculture 1981. Soil Survey of Luzerne County, Pennsylvania. Soil Conservation Service. 104 p. + maps.

[1] All route deviations implemented after the September 2015 FERC Filing are denoted with an "R" and indicate a milepost equation. Mileposts with an "R1" indicate route deviations implemented and provided to FERC prior to the issuance of the Draft Environmental Impact Statement (EIS). Mileposts with an "R2" indicate route deviations implemented as part of this September 2016 Supplemental Filing. All mileposts without an "R" indicate that the route has not changed since the September 2015 Application.

[2] Expected Minimum Depth to Bedrock includes depths from the NRCS Official Soil Series Descriptions and from the county soil surveys. Where there is a discrepancy, the county data is given preference.

[3] Length along the pipeline where the approximate pipeline trench depth is greater than the depth to bedrock.

Table 2: Soil Map Units Crossed by the Pipeline and Important Soil Attributes

County	Municipality	Begin Mile Post	Approx. End Mile Post	Soil Map Unit Name	Prime Farmland [1]	Slope [2]	Compaction [3]	Drainage Classification [4]	Revegetation Potential [5]	Erosion Potential [6]
Beltzville State Park and Beltzville Lake										
Carbon	Towamensing Township	43	43.4	Montevallo channery silt loam, 8 to 15 percent slopes, moderately eroded	Not prime farmland	12	Low	Somewhat Excessively Drained	Poor	Severe
Carbon	Towamensing Township	43.1	43.5	Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded	Farmland of state-wide importance	6	Low	Somewhat Excessively Drained	Poor	Moderate
Carbon	Towamensing Township	43.5	43.5	Middlebury silt loam, 3 to 8 percent slopes	All areas are prime farmland	2	Moderate	Moderately Well Drained	Fair	Slight
Carbon	Towamensing Township	43.5	43.6	Montevallo channery silt loam, 25 to 35 percent slopes, moderately eroded	Not prime farmland	30	Low	Somewhat Excessively Drained	Poor	Severe
Carbon	Towamensing Township	43.5	44	Water	Not prime farmland		Not Available	Not Available	Not Available	Not rated
Carbon	Towamensing Township	43.6	43.6	Hartleton channery silt loam, 3 to 8 percent slopes, moderately eroded	Farmland of state-wide importance	6	Low	Well Drained	Fair	Slight
Carbon	Towamensing Township	43.6	43.8	Hartleton channery silt loam, 0 to 3 percent slopes	Farmland of state-wide importance	2	Low	Well Drained	Fair	Slight
Carbon	Towamensing Township	43.8	43.8	Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded	Farmland of state-wide importance	6	Low	Somewhat Excessively Drained	Poor	Moderate
Carbon	Towamensing Township	43.8	44	Montevallo channery silt loam, 15 to 25 percent slopes, moderately eroded	Not prime farmland	20	Low	Somewhat Excessively Drained	Poor	Severe

County	Municipality	Begin Mile Post	Approx. End Mile Post	Soil Map Unit Name	Prime Farmland [1]	Slope [2]	Compaction [3]	Drainage Classification [4]	Revegetation Potential [5]	Erosion Potential [6]
Carbon	Towamensing Township	44	44.1	Montevallo channery silt loam, 15 to 25 percent slopes, moderately eroded	Not prime farmland	20	Low	Somewhat Excessively Drained	Poor	Severe
Carbon	Towamensing Township	44.1	44.2	Montevallo channery silt loam, 3 to 8 percent slopes, moderately eroded	Farmland of state-wide importance	6	Low	Somewhat Excessively Drained	Poor	Moderate

Notes:
[1] As defined by the U.S. Department of Agriculture (USDA)
[2] Inclination of the soil from horizontal and measured in percent
[3] Potential for mechanical activities to compact soils
[4] High = poorly drained, very poorly drained; Moderate = somewhat poorly drained, moderately well drained; Low = well drained, somewhat excessively drained, excessively drained
[5] Revegetation Potential estimated using NRCS Non-irrigated Capability Class. Capability Class 1 = Good, 2 = Fair, ≥ 3 = Poor
[6] Erosion Potential estimated using NRCS Potential Erosion Hazard for Road/Trail.

3.1.2 Environmental Impacts and Proposed Mitigation Measures

Specific soil attributes were selected based on the attributes' potential to cause construction limitations or potential hazards. None of the soils occurring within the Proposed Action area indicate that significant construction limitations or hazards are likely to occur. In addition, implementation of the Project's E&SCP will minimize potential hazards or impacts to soils during construction. The Project's E&SCP is consistent with the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan; May, 2013 version; FERC, 2013a) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures; May 2013 version; FERC, 2013b).

Geology

Ripping or blasting may be required in areas where the trench line for the pipelines intersects with shallow bedrock. However, no special geologic sites or features are located within USACE-owned/administered property in the Beltzville Lake. As such, implementation of the Proposed Action is not expected to damage or destroy any unique and unusual geologic features and no impacts are anticipated to geological resources as a result of the Project within USACE-owned/administered property. Similarly, the No Action Alternative would have no adverse impact to geological resources in the area.

Soils

The primary potential soil impacts from the Proposed Action would occur during construction from the temporary surface disturbances that expose soils to potential risk of erosion, sedimentation into waterbodies, and possible mixing of topsoil and subsoil. Soils may be compacted and bedrock fragments may be introduced into the topsoil by trenching or blasting. Construction also has the potential to affect revegetation productivity. The No Action Alternative would not result in impacts to soil resources on USACE property as no construction/operation of the pipeline would occur; however, the Project would likely be rerouted around USACE property, requiring additional pipeline mileage and subsequently increased soil/surface disturbance, potentially resulting in increased soil impacts.

USACE's objective is to minimize the potential for soil erosion and sedimentation during pipeline construction and to ensure disturbed areas are effectively restored and revegetated. This objective will be met by implementing erosion and sedimentation control BMPs that are outlined in the E&SCP. The Project's E&SCP is consistent with the FERC's Plan, the FERC's Procedures (FERC, 2013a; FERC, 2013b), and 25 Pennsylvania Code Chapter 102 regulations relating to erosion and sediment control, and it addresses soil erosion, soil compaction, and drainage issues. The E&SCP emphasizes the use of standard erosion control techniques to reduce the potential of erosion and the use of temporary control measures, such as, but not limited to: slope breakers, trench breakers, sediment barriers, and re-establishment of stabilizing vegetation.

Heavy equipment will be restricted to stabilized public roadways or within delineated Project boundaries to minimize compaction. Compacted areas or ruts will be ripped or disked prior to final stabilization with vegetative cover. The area immediately atop the pipeline trench, or any other areas where topsoil is removed, will be top-soiled (either with previously segregated or with imported topsoil) prior to final stabilization with vegetative cover.

Following installation of the pipeline facilities, erosion will be minimized by implementing permanent restoration measures within the ROW. Following restoration and clean up, the disturbed areas will be monitored to maintain erosion control measures. The methods that will be utilized to minimize impacts on soils during construction include, but are not limited to:

- Minimize the area and duration of soil exposure;
- Protect critical areas by reducing the velocity of and controlling runoff;

- Install and maintain erosion and sediment control measures;
- Reestablish vegetation following final grading; and
- Inspect the ROW and maintain erosion and sediment controls, as necessary, until final stabilization is achieved.

Prime Farmland Soils

Potential short-term impacts to prime farmland soils associated with construction of the Proposed Action may include increased soil erosion and sedimentation due to the removal of vegetation, compaction of soils caused by construction vehicles and equipment, inclusion of rock fragments in the topsoil caused by blasting, and poor revegetation of the soil types impacted by the proposed Project. To mitigate impacts to farmland of statewide importance soils after construction, the ROW will be regraded and seeded, and temporary erosion control devices will be installed according to the laws, regulations, and improved BMPs. Minimal impacts are anticipated to prime farmlands and farmland of state-wide importance within the Proposed Action area as the majority of USACE-administered property will be crossed via HDD.

3.2 Water Resources

Beltzville Lake is one of the largest water resources in Carbon County, and has been impounded for flood control, water supply, and recreational use. As such, maintenance and protection of water quality within Beltzville Lake are of primary importance.

PennEast has applied for USACE Section 404 and Section 10 permits, a Section 401 Water Quality Certification, PADEP Chapter 105 Water Obstruction and Encroachment permits, a PADEP Chapter 102 Erosion and Sediment Control General Permit, and DRBC authorization. The PADEP granted a State Water Quality Certification for the Project on February 7, 2017. The remaining permit applications are currently under review by the USACE, PADEP, and DRBC.

3.3 Affected Environment

Groundwater

The Proposed Action area does not overlie any United States Environmental Protection Agency (EPA)-designated sole-source aquifers (EPA, 2007). The Proposed Action area crosses the Valley and Ridge Principal Aquifers, and the Mahantango and Marcellus bedrock aquifer formations. No public or private wells were observed in the Proposed Action area during field surveys. Based on a search of the DCNR Pennsylvania Groundwater Information System (PaGWIS) database, no wells are located within, or within 150 feet of the Proposed Action's construction workspace. One field-identified groundwater seep was identified in the Proposed Action area near MP 43.9; however, the HDD will avoid impacts to this resource.

Floodplains

The Proposed Action area intersects a Zone A – Federal Emergency Management Agency (FEMA) designated Special Flood Hazard Areas (i.e., 100-year floodplains). Specifically, the Proposed Action area would cross a total of approximately 0.3 mile of FEMA-designated 100 year floodplains at Beltzville Lake including 0.10-mile associated with Wild Creek and 0.2 mile associated with Pohopoco Creek (FEMA, 2017).

Wetlands and Waterbodies

Wetlands crossed by the Proposed Action area were identified using site-specific field delineation results. Wetland delineations were conducted in accordance with the 1987 USACE Wetland Delineation Manual

(Environmental Laboratory, 1987) and using the Eastern Mountain Piedmont Regional Supplement (USACE; 2011, 2012a-b) in the spring and summer of 2015. Wetlands within the Proposed Action area were classified according to the USFWS Classification of Wetlands and Deepwater Habitats for the United States. Wetland classifications were based upon vegetation type and dominance: palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). Dominant vegetation was evaluated on percent aerial cover for each stratum: tree, sapling/shrub, herbaceous, and woody vine (Cowardin, 1979). Wetlands were classified using the Cowardin Wetland classification system (Cowardin, 1979). Wetlands located within the 400-foot study corridor of the Proposed Action area are presented in Table 3.

Waterbodies were identified during field surveys conducted during the spring and summer of 2015. Waterbodies located within the 400-foot study corridor of the Proposed Action area are presented in Table 4. No Federal or State-designated wild/scenic rivers are located within USACE property crossed by the Proposed Action.

3.3.1 Environmental Impacts and Proposed Mitigation Measures

Groundwater

Construction activities that could affect groundwater include clearing of vegetation, the temporary dewatering of the trench and bore pits, soil mixing and compaction, and fuel handling (discussed below). Impacts could include changes in the volume and rate of groundwater infiltration, groundwater contamination, and alteration of groundwater flow and well yields. Clearing and grading of the ROW and construction workspaces would remove vegetation that could act as a filter for groundwater recharge and/or rate of recharge. In accordance with the Project's E&SCP, vegetation would only be cleared where necessary and would be allowed to re-vegetate once construction was complete.

Excavation would typically occur at depths that are shallower than the aquifers in the Project area; however, trench dewatering may be necessary at times to install the pipeline in areas where there is a high water table or during periods of excessive precipitation. Any lowering of localized groundwater is expected to be temporary, and dewatering activities will be performed in accordance with approved BMPs and permit conditions. Where trench dewatering is necessary, water will be discharged through an energy-dissipation structure such as a filter bag into a well-vegetated upland area to minimize erosion associated with discharge.

With implementation of spill prevention measure discussed below, no adverse effects to groundwater resources are anticipated during construction or operation of the Project. The No Action Alternative would not result in impacts to groundwater resources in USACE property as no construction/operation of the pipeline Project would occur; however, the Project would likely be rerouted around USACE property, potentially resulting in similar impacts to groundwater resources in the area.

Spill Prevention Measures

Groundwater contamination could occur from an inadvertent spill of fuel or hazardous liquids during refueling or maintenance of construction equipment, or during operation of aboveground facilities. Hazardous liquids would be stored and handled according to its Spill Prevention Control and Countermeasure (SPCC) Plans and E&SCP to minimize potential spills. In addition, the procedures in the Project SPCC Plan would be implemented in the event of an inadvertent release of hazardous materials to prevent groundwater contamination. In the event of damages resulting from construction, damage will be mitigated through measures, which may include, but are not limited to, providing temporary sources of potable water, and conducting the restoration, repair, or replacement or water supplies.

Table 3: Wetlands within 400-Foot Study Corridor in Proposed Action Area at Beltzville Lake

Wetland ID	Cover Type	Proposed Crossing Method	Latitude	Longitude	Delineated Acres	Exceptional Value (Yes / No) [1]	Acres Affected	
							Temp. Impact (acres)	Perm. Impact(acres)
052215_JC_1001_PEM	PEM	HDD	40.887004	-75.560792	0.028	No	-	-
052215_JC_1002_PFO	PFO	HDD	40.882917	-75.554327	0.093	Yes (iii)	-	-

[1] Resource Value Definitions: Pennsylvania Exceptional Value Wetland as defined by PA Code §105.17 (relating to special criteria for projects affecting important wetlands). Criteria are:
Other: a wetland which does not meet the criteria of a PA Exceptional Value Wetland
(i) Serves as habitat for fauna or flora listed as ''threatened'' or ''endangered'' (Pennsylvania Natural Heritage Program [PNHP]. 2012. County Natural Heritage Inventories Core Habitat of Biological Diversity Areas.);
(ii) Is located within a 1/2-mile from habitat for fauna or flora listed as ''threatened'' or ''endangered'' and wetland dependent;
(iii) Located in or along the floodplain of the reach or tributaries of a wild trout stream or waters listed as exceptional value;
(iv) Located at or near existing public or private drinking water supply.

Table 4: Waterbodies within 400-Foot Study Corridor in Proposed Action Area at Beltzville Lake

Waterbody ID	USGS Stream Name	Flow Regime	Crossing Method	Latitude	Longitude	FERC Class [1]	PA Code Chp 93 Designation [2]	PFBC Status [3]	Temp. Impact (acres)	Perm. Impact (acres)
052215_JC_1001_LAKE_MA	Pohopoco Creek (Wild Creek)	Perennial	HDD	40.883151	-75.554003	Major	EV, MF	Wild Trout Water (Natural Reproduction)	-	-
052215_JC_1002_D_IN	-	Ditch	HDD	40.884126	-75.555185	-	-	-	-	-
052215_JC_1003_I_MI	UNT to Pohopoco Creek	Intermittent	HDD	40.883398	-75.554466	Minor	CWF, MF	-	-	-
052215_JC_1001_LAKE_MA	Pohopoco Creek	Perennial	HDD	40.883151	-75.554003	Major	CWF, MF	Wild Trout Water (Natural Reproduction)	-	-

[1] FERC classifies waterbodies as "minor waterbody" (Minor) including all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing; "intermediate waterbody" (Intermediate) including all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and "major waterbody" (Major) including all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.
[2] State-designated exceptional value (EV) waters are waterbodies that provide habitat for Federally-listed threatened or endangered species, or waterbodies designated as public water supplies. Migratory fishes (MF) waterbodies support the passage, maintenance, and propagation of anadromous and catadromous fishes and other fishes, which ascend to flowing waters to complete their life cycle. Coldwater Fishes (CWF) waters maintain and/or propagate fish species including the family Salmonidae and additional flora and fauna, which are indigenous to a cold water habitat.
[3] Pennsylvania Fish and Boat Commission designated wild trout waters include stream sections supporting naturally reproducing populations of trout.

Floodplains

The Project ROW in the Proposed Action area crosses FEMA designated flood hazard areas; however, by utilizing HDD crossing methods, there would be no earth disturbances within the floodplains. Therefore, no changes to the 100 year flood elevation or flow patterns are anticipated, and there would be no increased flood risks to structures, human health, safety, or welfare. Similarly, the No Action Alternative would not result in floodplain impacts on USACE property as no construction or operation of the pipeline would occur. However, the Project would likely be rerouted around USACE property potentially resulting in greater impacts to floodplain resources.

Wetlands and Waterbodies

Two wetlands and four waterbodies were field identified within the 400-foot study corridor of the Proposed Action area along Beltzville Lake. These resources are described in Tables 3 and 4. Maps providing detailed resource locations within the Project workspace are shown in Appendix B.

HDD techniques would be used to cross under wetlands and waterbodies on USACE property at Beltzville Lake, avoiding impacts to these resources. By utilizing HDD techniques, temporary and permanent conversion of wetland cover types would be avoided (e.g., there will be no conversion of forested wetland to un-forested cover types). The No Action Alternative would also not result in waterbody or wetland impacts on USACE property as no construction/operation of the Proposed Action would occur. However, the Project would likely be rerouted around USACE property, potentially resulting in increased impacts to waterbody and wetland resources when compared with the Preferred Alternative.

Construction and Impact Minimization Procedures for Wetlands and Waterbodies

As noted above, the Proposed Action would utilize HDD technology to cross under wetlands and waterbodies within the Proposed Action area, minimizing the risk of impacts to these resources. However, HDD operations have the potential to release drilling fluids into the surface environment through unanticipated release. An unanticipated release is the condition where drilling mud is released through fractured bedrock into the surrounding rock and sand and travels toward the surface. Because drilling muds consist largely of a bentonite clay-water mixture, they are not classified as toxic or hazardous substances. However, if released into waterbodies, bentonite has the potential to adversely impact fish and invertebrates. Drilling fluid seepage associated with an unanticipated release is most likely to occur near the bore entry points where the drill head is shallow; however, unanticipated release can occur in any location along a directional bore. An HDD Inadvertent Returns and Contingency Plan is provided as Appendix C. The HDD Inadvertent Returns and Contingency Plan establishes operational procedures and responsibilities for the prevention, containment, and clean-up of unanticipated releases that would be implemented in the event of an unanticipated release. A team of full time EIs would be on-site to monitor construction and implement corrective actions established within the HDD Inadvertent Returns and Contingency Plan as needed. Any impacts to wetlands and waterbodies in response to an unanticipated release would be reported to the USACE and PADEP in compliance with permit conditions.

Erosion & Sediment Control

Potential surface disturbances associated with Proposed Action include vegetation clearing, trench excavation, boring and HDD activities, multi-phase pipeline installation, site restoration, and revegetation. These activities would result in the potential for increased runoff, erosion, and sedimentation within USACE administered property at Beltzville Lake. However, BMPs are incorporated into the Project E&SCP which are consistent with FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) (May 2013) and Procedures (FERC, 2013), as well as local, State and Federal regulations.

3.4 Vegetation

3.4.1 Affected Environment

The Project workspace and permanent ROW within USACE-owned/administered Beltzville Lake is primarily surrounded by open field and forest vegetation including deciduous, evergreen, or a mix of the two forest types. Specifically, the Proposed Action ROW encompasses approximately 0.23 acre of open land and 4.51 acre of forested land within USACE property at Beltzville Lake; however, the majority of this land will be crossed via the HDD method.

3.4.2 Environmental Impacts and Proposed Mitigation Measures

Impacts to sensitive resources, including forested, wetland, and waterbody areas within Beltzville State Park would be avoided by constructing the Project using an HDD. Construction of the Proposed Action will require clearing and grading of an open field within Beltzville State Park, which will disturb vegetation within the Project footprint. Approximately 3.07 acres of temporary vegetation clearing will be required within USACE-administered property around Beltzville Lake to install the pipeline and construct a temporary HDD bore pad. Once construction is complete, approximately 6.42 acres will be located in the permanent Project ROW on USACE-administered property at Beltzville Lake. Minor hand clearing will be conducted in areas crossed by HDD to maintain a clear line of sight between pipeline markers. Specifically, this minor hand clearing is expected to include branch and low sapling/shrub clearing to maintain line of sight in between pipeline marker posts, typically a walking trail. This would include branches at a height of eye level to the ground (to prevent a safety hazard to operation personnel) and cutting sapling/shrubs near the surface to avoid tripping hazards. By accommodating safety considerations for operation personnel, PennEast will eventually end up with a line of sight for placement of marker posts. It common industry practice to place these posts at intervals of between 200 and 300 feet. Spacing could be closer to accommodate changes in topography and/or when mature trees are encountered. There will be no cutting of mature trees for light of sight or marker posts. There will be no hand clearing of vegetation necessary to maintain sight of clearing, vegetation spraying, or earth disturbance in areas crossed by HDD. As a result, no permanent impacts or land use changes will occur at Beltzville State Park.

Following construction, disturbed areas will be stabilized and reseeded in accordance with the FERC Upland Erosion Control, Revegetation, and Maintenance Plan (Plan; FERC 2013a). Therefore, it is anticipated that Project impacts to vegetation on USACE-owned/administered properties will be minimized and mitigated. It is anticipated that the No Action Alternative would not result in impacts to vegetation on USACE property as no construction/operation of the pipeline would occur. However, the Project would likely be rerouted around USACE property, resulting in potentially more impacts to vegetation as pipeline construction would require clearing a new ROW along a likely longer route.

3.5 Biological Resources

The USACE property at Beltzville Lake provides habitat consisting of forested and scrub-shrub uplands, wetlands, streams and rivers/lakes. These areas support a variety of wildlife species common to Pennsylvania including osprey (*Pandion haliaetus*), turkey (*Meleagris gallopavo*), red-winged blackbirds (*Agelaius phoeniceus*), robins (*Turdus sp.*), song sparrows (*Melospiza melodia*), common mergansers (*M. merganser*), mallards (*Anas platyrhynchos*), red fox (*Vulpes fulvus*), white tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), opossum (*Didelphimorphia*), and the occasional black bear (*Ursus americanus*). In addition, USACE property supports a variety of amphibians and reptiles including a number of different frog, turtle, salamander, and snake species. All these species encompass a wide range of the USACE property, moving between habitat types, including transient use of the forest edge along utility ROWs.

Beltzville Lake also provide habitat for a fish species and is stocked with warm water and coldwater game fish and panfish. Common species are brown trout (*Oncorhynchus, sp.*), striped bass (*Morone saxatilis*), largemouth and smallmouth bass (*Micropterus sp.*), walleye (*Sander vitreus*), muskellunge (*Essox masquinongy*), and perch (*Perca sp.*).

3.5.1 Affected Environment

PNDI review and consultation with the USFWS, DCNR, PFBC, and PGC was initiated on August 12, 2014. Table 5 summarizes species of concern that may be within the vicinity of Beltzville Lake or which have ideal habitat near the proposed pipeline corridor. Table 5 also lists the animal species identified through consultations with the Federal and State agencies as endangered, threatened, candidate, or of concern. In addition, birds that were identified through an Information, Planning, and Conservation (IPAC) database search are provided in Table 5. Plant species that are listed as endangered or threatened or of special concern are included within Table 5. Regulated wildlife species (listed as threatened or endangered under Federal or State law) are described in further detail below.

Species-specific and habitat related surveys for threatened and endangered (T&E) species have been completed for the Beltzville Lake area. These surveys were completed by qualified biologists in accordance with applicable State or Federal survey guidelines in the spring and summer of 2015. The results of these surveys are summarized herein.

Rare, Threatened and Endangered Species

Rare, threatened, or endangered (RTE) species that could occur in the vicinity of the proposed Project were identified through written consultations with USFWS, PGC, PFBC, and DCNR. The following sections describe species of concern that may be present within the Proposed Action area and could be impacted during construction and operational activities.

Birds

Birds of concern that may be located within the Project ROW at USACE administered Beltzville Lake include the Bald Eagle (*Haliaeetus leucocephalus*) which is protected under the Federal Bald and Golden Eagle Protection Act, as well as the Migratory Bird Treaty Act (MBTA). Primary habitat preferences of the bald eagle is near areas of low human development with expanses of open water containing abundant prey and forested areas with large super canopy trees for perch hunting, roosting and nesting. Generally, habitat eagles use for foraging and breeding have diverse levels of forest height and forest edge and a mix of live canopy trees and dead snags located within approximately two kilometers of a water body (Buehler, 2000).

In consultations, the USFWS noted the location of one bald eagle nest site within the vicinity of Beltzville Lake. Upon further evaluation the nest was found to be well-outside the Project corridor (approximately 6,100-feet from MP 43.0).

Important Bird Areas

No designated Important Bird Areas (IBAs) are located within the Proposed Action area on USACE property at Beltzville Lake.

Table 5: Federally and State-Listed Species Potentially Occurring Within the Proposed Action Area

Species Group	Species Common Name	Scientific Name	Federal Status	State Status [1]	Project Components where Present	MP/County/State of Potential Occurrence within Project Area [2]	Survey Conducted (Y/N)[3]	Detected with Project Area (Y/N)[4]	Notes
Mammals	Indiana bat	*Myotis sodalis*	Endangered	Endangered	Pipeline	Carbon County, PA	Yes	No	Mist net surveys and radio-telemetry conducted in coordination with USFWS and PGC. None detected in project area. USFWS indicated a survey would likely be required for clearing all trees greater than 5 inches DBH. Tree clearing activities limited to the winter, November 1- March 31. USFWS mandated 0.25-mile activity restriction buffer near known hibernacula.
	Northern long- eared bat	*Myotis septentrionalis*	Threatened	Special Concern	Pipeline	Carbon County, PA	Yes	Yes	Mist net surveys and telemetry conducted in coordination with USFWS and PGC. PGC requiring all trees greater than 5 inches DBH are harvested between November 1 and March 31 to prevent impacts to northern long-eared bats. USFWS mandated 0.25- mile activity restriction buffer near known hibernacula.
Birds	Bald eagle	*Haliaeetus leucocephalus*	Protected under the Bald and Golden Eagle Protection Act	Delisted	Pipeline	Carbon County, PA	Yes	No	USFWS listed as migratory bird of concern and requested Bald Eagle Screening. Bald Eagle Project Screening form completed and recommended avoidance measures that would be followed includes AM 3, AM4, and AM5 plus AM for blasting (see bald eagle section of text for details of AMs).
Plants – State	Northeastern bulrush	*Scirpus ancistrochaetus*	Endangered	Endangered	None	Carbon County, PA	Yes	No	A northeastern bulrush survey was conducted by qualified botanist (June 1-September 30). Where identified, USFWS requires 300-foot buffer around wetlands and 150-foot buffer around waterways to protect northeastern bulrush. No bulrush found in surveys.
	Wild Bleeding Hearts	*Dicentra exima*	Not Listed	Endangered	None	Beltzville State Park, Carbon County, PA	Yes	No	DCNR, Bureau of Forestry, listed as rare plant in vicinity of Project. Not found during targeted surveys.
	Matted spike rush	*Eleocharis intermedia*	Not Listed	Of Concern	None	Beltzville State Park, Carbon County, PA	Yes	No	Special request by DCNR, Bureau of State Parks/Forestry. Survey conducted by qualified botanist and none were found.
	Sweet-gale	*Myrica gale*	Not Listed	Threatened	None	Carbon County, PA	Yes	No	DCNR, Bureau of Forestry, listed as rare plant in vicinity of project. None found during targeted surveys of Project.

Sources: DCNR, 2014; Markuson, 2014; NOAA, 2015; PFBC, 2014; PFBC, 2015(a-g); PGC, 2008; PGC, 2013; PGC, 2014. PGC, 2015(a-c). PNHP, n.d.(a-b).; PNHP, 2014; Shellenberger, 2014; Taucher, 2014. USFWS, n.d.;

[1] Status listed though occurrence may not have been identified within Project area - see column titled "MP/County/State of Potential Occurrence within Project Area" for locations of possible occurrence.

[2] Based on Federal and state resource agency feedback.

[3] Survey conducted information is current as of surveys completed by the end of August 2015.

[4] Detected within Project area information is current as of surveys completed by the end of August 2015.

[5] Plant species are based upon correspondence and communications received from DCNR.

[6] Birds within Project area that are either Federally or State-listed and which are identified in Agency Correspondence are included in this table.

Mammals/Reptiles

Based on correspondence dated September 2014, the USFWS and PGC raised concerns regarding the Indiana bat (*Myotis sodalis*) – a Federally-listed endangered species, and the northern long-eared bat (*Myotis septentrionalis*), a Federally-listed threatened species.

Surveys, including mist netting and radio-tracking of captured female and bat species of concern, were conducted for Indiana bats by Recognized, Qualified Indiana Bat Surveyors (QIBSs) in accordance with the USFWS Indiana Bat summer survey guidance (USFWS, 2015a) and PGC bat survey protocols. Surveys were performed within the vicinity of Beltzville Lake during the summer of 2015 under the supervision of USFWS approved QIBS who were present at each site to positively identify captured bats. No Indiana bats were captured.

USFWS also requested habitat surveys be conducted for the northern long-eared bat. Habitat assessments and surveys were conducted in the spring and summer of 2015 by qualified bat biologists in accordance with accepted Federal and State protocols (Wildlife Specialists, 2015a & 2015b). Surveys were performed within the vicinity of Beltzville Lake during the summer of 2015 under the supervision of USFWS approved QIBS who were present at each site to positively identify captured bats. One Federally-threatened northern long-eared bat was captured during mist net surveys.

Plant Species

The USFWS in Pennsylvania has requested that surveys be conducted by a Qualified Northeastern Bulrush Surveyor between June 1 and September 30. Protective measures would include a 300-foot buffer around wetlands and 150-foot buffer around waterways that support this species. A USFWS-listed, Qualified Northeast Bulrush Surveyor was contracted to conduct northeastern bulrush surveys at Beltzville State Park. These surveys were completed between July and August. No northeast bulrush was found (Mellon Biological, 2015).

The DCNR identified numerous State threatened, endangered, and rare plant species as potentially occurring within the Project corridor (DCNR, 2014). Those plant species which are threatened, endangered, or of State special concern are included within Table 5. The DCNR Natural Heritage Section requested that surveys be conducted for plant species of concern in Carbon County in its consultation updates in February 2015 and April 2015 (DCNR 2015a; DCNR 2015b). In addition, the DCNR Bureau of Forestry and State Parks requested that additional plants be included within surveys when it issued the Certificate to Survey for the project (DCNR 2015c). A qualified botanist was contracted to complete these surveys during the spring and summer of 2015 (Ebert, 2015). No rare plants were observed within the Project corridor of Beltzville State Park.

3.5.2 Environmental Impacts and Proposed Mitigation Measures

The majority of Beltzville State Park and all of Beltzville Lake would be crossed via HDD to limit the potential of disturbance to biological resources within the Proposed Action area. As a result, no impacts to forested areas, wetlands or waterbodies are anticipated within USACE-administered property at Beltzville Lake. As a result, it is not anticipated that the Proposed Action would have the potential to adversely affect fish species within USACE property at Beltzville Lake during construction. With the implementation of the avoidance, minimization and restoration measures discussed below, no adverse impacts to plant and wildlife species in the Proposed Action area are anticipated during construction. Earth disturbance activities may result in the loss or mortality of some less mobile species such as small mammals or insects; however, this would not adversely impact the overall population of these species on USACE properties.

During operation of the pipeline, it is anticipated that minimal to no disturbances would occur to the surrounding areas. Therefore, it is not anticipated that the Project would have adverse effects to the surrounding wildlife and fish populations or habitat during operations and maintenance of the pipeline. It is anticipated that the No Action Alternative would not result in adverse effects to the surrounding wildlife and fish population or habitat as no construction, clearing, or surface disturbance associated with the Project would occur on USACE property. However, the Project would likely be rerouted around USACE property, requiring the clearing of a new ROW along a likely longer route, potentially resulting in additional long-term habitat impacts.

Rare, Threatened and Endangered Species

Birds

In consultations, the USFWS noted the location of one bald eagle nest site within the vicinity of Beltzville Lake, which upon further evaluation was determined to be well-outside the Project corridor (the nearest bald eagle nest identified is approximately 6,100 feet from MP 43.0). The USFWS requested that a project habitat screening be conducted in accordance with data forms provided and the National Bald Eagle Management Guidelines (USFWS, 2007b). The completion of this screening form resulted in the following recommended Avoidance Measures (AMs):

- AM 3 – A distance buffer of at least 330 feet (100 meters) would be maintained year-round between all Project activities and the nest (including alternate nests). If a similar activity (i.e., similar in kind and size) is closer than 330 feet and has been tolerated by eagles, the distance buffer would be the same or greater than that of the existing tolerated activity.
- AM 4 – Within 660 feet of a nest, all activities that may disturb bald eagles would be avoided from January 1 to July 31. These activities include, but are not limited to: construction, excavation, use of heavy equipment, use of loud equipment or machinery, vegetation clearing, earth disturbance, planting, and landscaping.
- AM 5 – Established landscape buffers that screen the activity from the nest would be maintained.

From January 1 to July 31 (the breeding season), blasting and other activities that produce extremely loud noises would not occur within 1/2 mile of active nests, unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the breeding area. This measure also applies to the use of fireworks classified by the USDOT as Class B explosives, which includes the larger fireworks that are intended for licensed public display. Because the bald eagle nest is located more than 1 mile from the Project, none of the recommended AMs would be required for the Project.

Migratory birds are protected under regulations including the MBTA and to a lesser extent, provisions contained within the Fish and Wildlife Coordination Act (FWCA). In consultation with the USFWS, the Ecological Field Office in Pennsylvania requested adherence to their Adaptive Management Practices for Conserving Migratory Birds. Additionally, lists of migratory bird species of concern were provided by the USFWS in Pennsylvania. Impacts to migratory birds would be minimized by implementing recommendations provided by USFWS. Where disturbance is necessary, tree clearing activities would occur between September 1 and March 31 outside of the nesting season for most native bird species. During project design and construction, land and vegetation disturbance would be minimized to the degree feasible. For example, the HDD crossing method would be used to avoid tree clearing, and site temporary workspace areas and other infrastructure in or immediately adjacent to already-disturbed areas. Permanent habitat alterations in areas where birds are highly concentrated would be avoided. In addition, land disturbed within the Proposed Action area would be allowed to revert to its pre-construction state after completion of construction activities, as feasible. Recommended seeding mixes would be used to facilitate revegetation of the Proposed Action area.

Important Bird Areas

Beltzville State Park and Beltzville Lake are not designated as IBAs and therefore, no impact or mitigation measures are proposed for IBAs within the Proposed Action area.

Mammals/Reptiles

The alignment crosses no known Indiana bat colonies; however, USFWS has indicated if clearing is proposed for trees >5 inches diameter at breast height (DBH), a survey would likely be required (Markuson, 2014). Timing restrictions on tree clearing (i.e., limiting tree clearing activities to the winter, November 1-March 31) can be used as an impact minimization measure in locations where deemed appropriate by bat concentrations identified during study. No Indiana bats were been captured in the Project area; however, one Federally-threatened northern long-eared bat was captured during mist netting surveys (discussed below). Based on the results of the surveys and telemetry, it is expected that timing restrictions for tree clearing between November 1 and March 31 would be required in Beltzville State Park; however, tree clearing is not currently anticipated at Beltzville Lake or the surrounding USACE-owned property.

One Federally-threatened northern long-eared bat was captured during mist netting surveys. According to USFWS, timing restrictions on tree clearing (i.e., limiting tree clearing activities to the winter, November 1 - March 31) can be used as an impact minimization measure in locations where deemed appropriate by bat concentrations identified during the study. Additionally, the PGC is requiring that all tree species >5 inches DBH be harvested between November 1 and March 1 to prevent impacts to northern long-eared bat (PGC 2014, PGC 2008). Based on the results of the surveys and telemetry, it is expected that timing restrictions for tree clearing between November 1 and March 31 would be required in Beltzville State Park and the Beltzville Lake area; however, tree clearing is not currently anticipated at Beltzville Lake or the surrounding USACE-owned property.

Plant Species

Rare plant surveys were conducted for northeastern bulrush, wild bleeding hearts, matted spike rush and sweet-gale within the Proposed Action area of Beltzville State Park. No rare plants were identified during field surveys. If any rare plants are identified before or during construction they will be marked in the field and avoided whenever possible, or relocated when not possible to avoid. Impacts to rare plants will also be minimized through topsoil segregation and use of native seed mixes without grass in specified areas with rare plant populations.

3.6 Cultural Resources

Cultural resource investigations were conducted for the Project using Pennsylvania's Cultural Resources Geographic Information System, field surveys, and ongoing consultation and coordination with the Pennsylvania Historical and Museum Commission (PHMC) which serves as the State Historic Preservation Office (SHPO). The primary goals of cultural resource investigations conducted as part of the Section 106 review for the Project are to: 1) locate, document, and evaluate buildings, structures, objects, districts, landscapes, and archaeological sites that are listed in or eligible for listing in the National Register of Historic Places (NRHP); 2) assess potential effects of the Project on those resources, and 3) provide recommendations for subsequent treatment of those resources, if necessary, to assist with compliance with Section 106.

In addition to Section 106, the cultural resources investigation was conducted for the Project in accordance with the following documents:

- The FERC Office of Energy Projects' Guidelines for Reporting on Cultural Resources Investigations (2002);

- The United States Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Federal Regulations 44716-42, 1983);
- Section 380.3 of FERC's regulations;
- Cultural Resource Management in Pennsylvania: Guidelines for Archeological Investigations (PHMC 2008);
- Guidelines for Architectural Investigations (PHMC 2014); and
- Survey Guidelines for Pipeline Projects – Above Ground Resources June 2013 (PHMC 2013).

The initial phase of investigation involved an overview survey to gather information about previous cultural resource investigations and known archaeological sites within the 400-foot Study Corridor. For historic architectural resources, information was gathered on previously recorded resources within one-quarter mile of the Project corridor inclusive of any properties that may fall within the indirect area of potential effects (APE). The information regarding archaeological sites was used to stratify the Project's area into zones of cultural resources sensitivity. Cultural resources sensitivity is defined as the likelihood for pre- or post-contact cultural resources to be present within the Project areas based on different categories of information.

Archaeological sites within the 400-foot Study Corridor and historic architectural properties within the direct and indirect APEs are those that are most likely to be impacted by the Project. These resources are described below.

3.6.1 Affected Environment

Archaeological Resources

USACE Federally-owned property at Beltzville State Park and adjacent Beltzville Lake were surveyed for archaeological resources in spring and fall of 2015. In Pennsylvania, the archaeological survey followed the guidelines established in Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations (PHMC 2008). The 400-foot study corridor was subject to a thorough pedestrian survey to define above-ground indicators of archaeological sites such as rock shelters, standing structures, or foundations regardless of field conditions (i.e., steep slopes, standing water). No archaeological resources were identified during desktop review or field surveys conducted within the study corridor at the proposed Beltzville State Park and Beltzville Lake crossing.

Historic Resources

Although survey access has been granted to the USACE Federally-owned property at Beltzville State Park and adjacent Beltzville Lake; historic architectural surveys are not necessary on the USACE Federally-owned parcels because there are no historic architectural resources within the 400-foot study corridor that are listed in or eligible for listing in, or potentially eligible for listing in the NRHP. As a whole, the Beltzville State Park was developed as part of the USACE flood control project and officially opened as a state park in 1972. Since the park is less than 50 years of age (age threshold set by the NRHP), survey and evaluation is not necessary.

3.6.2 Environmental Impacts and Proposed Mitigation Measures

Archaeological Resources

No archaeological resources were identified during desktop review or field surveys conducted within the study corridor at the proposed Beltzville State Park and Beltzville Lake crossing. As a result, no impacts to archaeological resources are anticipated as a result of the Proposed Action. The No Action Alternative

also would not have impacts on archaeological resources on USACE property as no construction/operation of the pipeline Project would occur. However, the Project would likely be rerouted around USACE properties, resulting in increased pipeline mileage and construction, as well as increased potential to encounter archaeological resources in the area.

In the unlikely event that previously unidentified cultural resources or Native American human remains are encountered during construction, avoidance/minimization procedures and protocols have been developed to be implemented if/when necessary, consistent with local, State, and Federal regulations. This unanticipated discovery plan would be implemented during Project construction to ensure that cultural resource impacts are minimized.

Historic Resources

No impacts to historic architectural resources are anticipated at the proposed Beltzville Lake crossing as a result of the Proposed Action. The No Action Alternative also would not have impacts on historic resources on USACE property as no construction/operation of the pipeline Project would occur. However, the Project would likely be rerouted around USACE properties, resulting in increased pipeline mileage and construction, as well as increased potential to encounter historic resources in the area.

3.7 Land Use

3.7.1 Affected Environment

The Proposed Action area would be located within USACE-administered property that has been constructed and used for flood control purposes and recreational uses at Beltzville Lake. However, most of the Project ROW would cross through USACE property via the HDD method to avoid impacts to forested areas, wetlands, and waterbodies. Where the pipeline would be installed via the open cut method, temporary workspace, ATWS and the permanent easement would be used during construction. In addition, a temporary bore pad would be used during construction to facilitate HDD under USACE property.

3.7.2 Environmental Impacts and Proposed Mitigation Measures

Approximately 8.64 acres would be located within the total construction workspace at Beltzville State Park. Of this total, approximately 3.07 acres, including the workspace that overlaps with the permanent easement, would be temporarily impacted during construction of the temporary ROW and ATWS. Approximately 6.42 acres of Beltzville State Park would be located within the permanent easement for use during construction, operation, and maintenance of the Project. There would be no change in land use due to Project operations, as all land on USACE-owned property would be allowed to revert to its pre-construction condition following completion of the crossing. No permanent land use impacts are anticipated on USACE property at Beltzville Lake.

A Site Restoration Plan has been prepared to minimize erosion and enhance revegetation after completion of construction activities associated with the Project. Restoration of the construction work area would be in accordance with the Project's E&SCP, including BMPs outlined in the FERC's Plan and Procedures. Restoration measures would include the re-establishment of original grade and drainage patterns to the extent practicable, as well as the installation of permanent erosion and sedimentation control devices to minimize the likelihood of post-construction erosion. After earth-disturbing activities or any stage or phase of an activity is completed, the site would immediately have topsoil restored, replaced, amended, seeded, and mulched or otherwise permanently stabilized and protected from accelerated erosion and sedimentation. Severely compacted areas would be scarified to a depth of 6 to 12 inches before seeding whenever possible. A recommended soil pH modifier and fertilizer would be incorporated into the top 2 inches of soil as soon as practicable. A permanent seed mix would be used for permanent vegetative

stabilization, and soil amendments, including lime and fertilizer, would be applied. Seeds would be disturbed in accordance with recommendations for seed rates and dates. Mulch would also be used to stabilize the soil surface and would consist of weed-free straw or hay, erosion control fabric, or some functional equivalent, as approved by the EI and Chief Inspector. Revegetation of areas disturbed by Project-related activities would be monitored after seeding/planting to ensure success. In addition, USACE and DCNR vegetation management requests for Beltzville State Park would be adhered to.

Post construction monitoring and maintenance would be conducted in accordance with the Site Restoration Plan, the E&SCP and FERC's Plan. An area would be considered to have achieved permanent stabilization when it has a minimum uniform 70 percent perennial vegetative cover. Revegetation efforts (such as fertilizing or reseeding) would continue until revegetation is successful. Follow-up inspections would be conducted of disturbed upland areas after the first growing season and, as necessary, the second growing season (normally 3 to 9 months and 15 to 21 months after seeding, respectively) to determine the success of revegetation. Restoration would be considered successful if the construction ROW surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless requested otherwise by the landowner or land managing agency), revegetation is successful, and proper drainage has been restored.

3.8 Recreational Uses

3.8.1 Affected Environment

The Proposed Action would cross Beltzville State Park and portions of Beltzville Lake between MPs 43.1 and 44.1. Beltzville State Park is a cooperative effort of the USACE, DCNR, and PGC. The USACE operates and maintains the dam while recreation is managed by DCNR under a lease agreement with the Pennsylvania Bureau of State Parks (USACE, 2014b). Beltzville State Park is a 3,002-acre park located at the foothills of the Pocono Mountains. The park is situated around the 949-acre Beltzville Lake and hosts 15 miles of hiking trails, 2.5 miles of mountain biking trails, and is open to a range of recreational activities including swimming, boating, fishing, hunting, cross country-skiing, and water-skiing. The location of the Proposed Action was chosen such that it is situated on the east side of the park away from recreational facilities, such as boat launches, beach houses and food concession areas. The Project would cross the Christman, Cove Ridge, and Falls Trails, along with the Waterfall area and Wild Creek cove, via HDD.

3.8.2 Environmental Impacts and Proposed Mitigation Measures

The USACE met with PennEast on October 30, 2014, July 16, 2015, and February 16, 2017 to discuss the proposed crossing at Beltzville Lake. During the July 16, 2015 pre-coordination meeting, the USACE outlined concerns about the Project's impact to recreational resources. The USACE requested that the Project minimize permanent impacts to forested areas, which are important recreation resources. The Wild Creek crossing in particular is an exceptional area of recreational interest, and the pipeline will cross near a parking area. As a result, the HDD method is proposed to avoid impacts to Wild Creek, Pohopoco Creek, and the surrounding forested uplands.

Using HDD technology will significantly reduce impacts to recreation at Beltzville Lake and the surrounding state park. To install the pipeline via a combination of conventional trenching and HDD, open land within Beltzville State Park will be temporarily impacted, which would restrict park visitor access in this area during construction to address safety concerns. During Project operations, minor hand clearing will be conducted in areas crossed by HDD to maintain a clear line of sight between pipeline markers. There will be no mechanized clearing, vegetation spraying, or earth disturbance in areas crossed by HDD. The No Action Alternative not result in any recreational activities on USACE-owned property as no construction/operation of the pipeline project would occur. However, the Project would likely be

rerouted around USACE property. Other potential recreational impacts or changes associated with the alternate routes outside of USACE property are unknown at this time.

3.9 Aesthetics

3.9.1 Affected Environment

The Proposed Action ROW is located on USACE property within a recreational area associated with Beltzville Lake. A mixture of scenery provides various panoramic views of forest and undeveloped land and waters that have been sustained for various recreational and open space uses. Visibility of the Project ROW would depend upon the topography and one's location within USACE property. Construction crews, equipment and stock piling of soil will be visible in open space within Beltzville State Park during construction of the Proposed Action. A pipeline corridor will not be visible following construction as HDD technologies will be employed to cross the majority of Beltzville State Park. Minor hand clearing will be conducted in areas crossed by HDD to maintain a clear line of sight between pipeline markers. There will be no mechanized clearing, vegetation spraying, or earth disturbance in areas crossed by HDD.

3.9.2 Environmental Impacts and Proposed Mitigation Measures

Visual impacts associated with the Project have been evaluated, minimized, and avoided wherever possible. The Project would not have any permanent visual impact on any Federal or State listed visually sensitive areas, such as scenic roads, rivers, or natural landmarks as these features are not present in the Proposed Action area. Construction of the Project route would result in temporary impacts to visual and/or aesthetic resources due to the construction equipment and activities necessary for constructing the pipeline, as well as soil disturbance. Construction impacts would be mitigated through stabilization and re-vegetation of the ROW. As the majority of the Proposed Action would be installed via HDD, aesthetics will not be permanently impacted during maintenance and operation of the pipeline. The No Action Alternative would not result in any aesthetic impacts to USACE-owned property. However, impacts to aesthetics outside the USACE-owned property would include the creation of new pipeline corridor that would likely be visible from local roads and possibly residences.

3.10 Air Quality and Climate Change

3.10.1 Affected Environment

The General Conformity Rule (the Rule) establishes conformity in coordination with and as part of the NEPA process. The 1990 amendments to the Clean Air Act (CAA) require Federal agencies to conform to State Implementation Plans (SIPs) in non-attainment areas. SIPs are State air quality plans that specify regulations that provide for the implementation, maintenance, and enforcement of the National Ambient Air Quality Standards (NAAQS) and include emission limitations and control measures to attain and maintain the NAAQS. Federal agencies are required to determine if proposed actions conform to the applicable SIP. The Rule affects air pollution emissions associated with actions that are Federally-funded, licensed, permitted, or approved and ensures that emissions do not contribute to air quality degradation or prevent the achievement of State and Federal air quality goals. The purpose of the Rule is to ensure that Federal agencies consult with State and local air quality agencies so that these regulatory entities are aware of the expected impacts of the Federal action and therefore, can include expected emissions in their SIP emissions budget.

The EPA developed two conformity regulations relating to transportation and non-transportation projects. Transportation projects are governed by the "transportation conformity" regulations (40 CFR 51 and 93). Non-transportation projects are governed by the "General Conformity" regulations (40 CFR 6, 51, and 93) described in the final Rule for determining conformity of general Federal actions to State or Federal Implementation Plans. Since the proposed Project is a non-transportation project, the Rule applies. Note

that the General Conformity Review process is not necessary for a new source or existing source modification that is subject to air permitting under New Source Review (NSR). This is because if a project goes through the NSR approval process, the agency having jurisdiction has confirmed the project would comply with and conform to the CAA and any related SIPs.

The process to determine conformity for a proposed action involves two distinct steps: applicability and determination. A determination is only required if an evaluation confirms that the Rule is applicable to a project. The first step, an applicability evaluation, is required for any action that is Federally-funded, licensed, permitted, or approved where the total direct and indirect emissions for criteria pollutants in a non-attainment or maintenance area exceed the rates listed specified in 40 CFR 93.153(b)(1) and (2). If Project emissions are estimated to exceed these rates, or if the emissions are determined to be regionally significant, a General Conformity Determination is required as the second step. The proposed action is considered regionally significant if the total direct and indirect emissions for any criteria pollutant represent 10 percent or more of a non-attainment or maintenance area emission inventory for that pollutant.

If the Rule is determined to be applicable for the proposed action, an evaluation must be performed to determine whether the action conforms to the SIP. Positive conformity can be shown through State emission budgets, emission offsets, air quality models, or any combination of these.

The General Conformity Rule applies only to Federal actions occurring in air quality regions designated as being in non-attainment for the NAAQS or attainment areas subject to maintenance plans (maintenance areas). Federal actions occurring in attainment areas are not subject to the conformity rules. In addition, a General Conformity Evaluation is not required for proposed actions that fall under an NSR Program or Operating Permit Program.

The Proposed Action area ROW through USACE-owned/administered property at Beltzville Lake is located within Towamensing Township in Carbon County, Pennsylvania. This township is within the Northeast Pennsylvania-Upper Delaware Valley Interstate Air Quality Control Region (AQCR). Areas meeting the NAAQS are termed “attainment areas,” and areas not meeting the NAAQS are termed “non-attainment areas.” The Project is within the Ozone Transport Region and considered non- attainment for ozone. However, for the specific purpose of General Conformity, areas that were designated as non-attainment for the revoked 1979 1-hour and 1997 8-hour ozone NAAQS are no longer considered non-attainment for the purpose of General Conformity (EPA notice 80 FR 12263). A discussion of potential air quality impacts and proposed mitigation of the Proposed Action are discussed below.

The USEPA has adopted regulations for the control of air pollutant emissions from off-road and mobile source engines (see 40 CFR Parts 89, 90, 91, and 94) which would be applicable to manufacturers, owners, or operators of certain equipment that would be used to construct the Project.

PADEP has also adopted regulations for the control of air pollutant emissions from certain motor vehicles. PADEP regulations include inspection and maintenance program requirements, testing and other requirements applicable to certain motor vehicles, heavy duty motor vehicles, and engines offered for sale or lease in Pennsylvania. Compliance with Pennsylvania Act 124 of 2008 limits idling of diesel-powered vehicles with a gross vehicle weight rating (GVWR) of 10,001 pounds (lbs.) to no more than five (5) minutes in any continuous 60 minute period.

On December 18, 2014, the Council on Environmental Quality (CEQ) released guidance on how federal agencies should consider the effects of greenhouse gas emissions and climate change during NEPA reviews (CEQ 2014). The guidance indicates that agencies should consider both the potential effects of a proposed action on climate change, as indicated by its greenhouse gas emissions, and the implications of climate change for the environmental effects of a proposed action. A discussion of the potential greenhouse gas impacts of the Project are discussed below.

3.10.2 Environmental Impacts and Proposed Mitigation Measures

Construction of the Project components would result in temporary emissions from construction equipment fuel combustion and fugitive particulate matter (PM) resulting from vehicle roadway travel and earthmoving and construction activities. Construction equipment would include earth-moving equipment (i.e., backhoes, bulldozers), skid loaders, pipe bending and handling, welding rigs, trucks and other mobile sources. These equipment may be powered either by diesel or gasoline engines and would contribute to overall construction emissions of nitrogen oxides (NOx), CO, volatile organic compounds (VOCs), PM_{10} and $PM_{2.5}$, sulfur dioxide (SO_2) and small amounts of air toxics (HAPs).

Moreover, construction activities would generate temporary emissions of fugitive dust due to earth disturbances, land clearing, grading, excavation, and vehicle traffic on both paved and unpaved roads. The amount of fugitive dust generated would be a function of the specific construction activities, silt and moisture content of the soil, frequency of precipitation during construction activities, vehicle traffic and type, and roadway characteristics. Fugitive dust emissions increase with higher silt content in the soil, and decrease with moisture content, as water acts as a suppressant.

A General Conformity Evaluation is required for the entire Project, including the Beltzville Lake crossing in Carbon County, Pennsylvania. Carbon County is marginal non-attainment for the 2008 Ozone standard. The estimated construction emissions from the specific Project elements in Carbon County are 28.4 tons NOx and 3.4 tons VOC. These emission estimates are taken from the "Total Construction Emissions by County" section of Table L2-1 which is the project emission summary table from the FERC application Appendix L-2, as updated by route changes and comment responses. Copies of the related tables, which were used as the basis of the FERC FEIS, are included in Appendix E. These quantities are significantly less than the General Conformity "De Minimis" Rates for Non-Attainment Areas (40 CFR 93.153). Therefore, a General Conformity Determination is not required. The Project demonstrates that the Proposed Action is consistent with Pennsylvania applicable state implementation plans via a General Conformity Review. Therefore, the construction activities at Beltzville Lake also conform to the implementation plan. The No Action Alternative would not result in air emissions generated on USACE property as no construction/operation of the pipeline would occur on this USACE property. However, as the Project would likely be rerouted around USACE property, similar or increased air emissions may result from additional pipeline mileage and construction required outside of USACE property.

Emissions of GHGs from the Project construction or operation would not have any direct impacts on the environment in the Project area. Currently, there is no standard methodology to determine how the Project's relatively small incremental contribution to GHGs would translate into physical effects on the global environment. The GHG emissions from the construction and operation of the Project would be negligible compared to the global GHG emission inventory. Additionally, burning natural gas results in less CO_{2e} compared to other fuel sources (e.g., fuel oil or coal). Because fuel oil is widely used as an alternative to natural gas in the region in which the Project would be located, it is anticipated that the Project would result in the displacement of some fuel oil use, thereby potentially offsetting some regional GHG emissions, in terms of CO_2.

3.11 Noise

3.11.1 Affected Environment

FERC noise analysis guidelines require that any applicable State or local noise regulations be identified and specify how the proposed facility will meet the applicable regulations. Consistent with FERC guidance for the quantification of the affected sound environment, existing outdoor ambient sound levels were estimated at pre-existing nearest noise-sensitive areas (NSAs) in proximity of the planned HDD crossing at Beltzville Lake. Table 6 lists NSAs located within 0.25-mile of the proposed crossing at Beltzville Lake.

Table 6: Estimated HDD Day-Night Average Sound Level (L_{dn}) at NSA nearest to HDD Crossings

HDD Crossing	Distance (feet) to HDD Entry	Nearest NSA ID & GPS Coordinates (GCS_WGS_84)	Existing Ambient Noise Level (L_{dn}, dBA)	Estimated HDD Noise Level (L_{dn}, dBA)	Total Estimated Ambient Sound Level (dBA, L_{dn})	Change in Ambient Level dBA, L_{dn})
Wild Creek/Pohopoco Stream (Beltzville Lake)	708 / 6758	NSA 3A-Entry: 40.8904, -75.5675	61	61	12	61
Wild Creek/Pohopoco Stream (Beltzville Lake)	1014 / 6952	NSA 3B-Entry: 40.8886, -75.5698	57	58	9	57
Wild Creek/Pohopoco Stream (Beltzville Lake)	1079 / 6110	NSA 3C-Entry: 40.8911, -75.5638	57	58	9	57
Wild Creek/Pohopoco Stream (Beltzville Lake)	6879 / 794	NSA 4A-Entry: 40.8784, -75.5453	60	60	17	60
Wild Creek/Pohopoco Stream (Beltzville Lake)	6402 / 888	NSA 4B-Entry: 40.8816, -75.545	59	59	16	59
Wild Creek/Pohopoco Stream (Beltzville Lake)	6121 / 1413	NSA 4C-Entry: 40.8768, -75.5505	54	54	11	54

Key:
dBA = A-weighted decibel (dB)
Est. = estimated
GCS WGS 84 = Geographic Coordinate System World Geoditic Survey 1984
GPS = geographical positioning system
HDD = horizontal directional drilling
L_{dn} = day-night average sound level
NSA = noise-sensitive area

3.11.2 Environmental Impacts and Proposed Mitigation Measures

Fauna and their habitats in the geographic vicinity of the Project ROW have likely developed a degree of habituation to man-made sources (both stationary and transportation-related) of noise that allow them to live in the area. Temporary construction activities from the project would generally resemble those, including surface transportation infrastructure among others (residential and commercial building projects) that have developed the Project vicinity over the years from primarily forested wilderness and agricultural land uses to rural residential and suburban land uses. Thus, temporary noise associated with

construction of the pipeline (including the HDD crossing) is unlikely to have a durable significant impact on wildlife that may inhabit the project vicinity.

As shown in Table 6, the predicted HDD noise may exceed the FERC threshold of 55 decibel (dBA) L_{dn} at some NSAs, and its acoustical contribution to the sound environment at some of the indicated nearest NSA may also temporarily raise the existing ambient outdoor sound level by as much as 17 dBA L_{dn}. At such NSA experiencing HDD noise that exceeds 55 dBA L_{dn}, mitigation is anticipated. In addition, pipeline construction noise is anticipated to exceed the FERC threshold of 55 dBA L_{dn} at potential NSA that are less than 3,100 feet away from the acoustical center of construction activity. Hence, for NSA that may be within this 3,100-foot screening distance, mitigation measures will be implemented as necessary.

Mitigation measures could include the following techniques:

- Stationary noise sources, such as generators and air compressors, will be placed away from NSAs to the farthest extent practical. As feasible, non-noise-producing mobile equipment such as trailers will be placed between noise sources and sensitive receivers. If such trailers or similar obstacles are used, to minimize flanking underneath or through vertical gaps, the openings will be covered with at least ½-inch thick plywood, hay bales or other sufficiently dense material.
- If there is not sufficient space to create a noise barrier using the non-noise-producing equipment in use at an active construction site, temporary noise barriers using appropriately thick wooden panel walls (at least ½-inch thick) built high enough to block the line-of-sight from the dominant construction noise source(s) to the NSA may also be constructed. Such barriers could, depending on factors such as barrier height, barrier length, and distance between the barrier and the noise-producing equipment or activity, reduce construction noise by 5 to 10 dBA at nearby NSA locations. Alternately, field-erected noise curtain assemblies could be installed around specific equipment sites or zones of anticipated mobile or stationary activity

Due to the relative short duration of HDD activity, compensation to the occupant(s) of an NSA may also be considered—on a case-by-case basis—towards provision of temporary hotel accommodations during the HDD activity. In other words, rather than mitigate the noise at the source or along its transmission path to the NSA, it may be more practical to temporarily relocate the receiver(s) so that they are not exposed to the source of potential annoyance.

The No Action Alternative would not result in noise impacts on USACE property as no construction/operation associated with the Project would occur. Nonetheless, the Project would likely be rerouted outside of USACE property and similar sound levels/noise would be generated elsewhere. However, the proximity of noise sensitive receptors is unknown at this time, resulting in potentially increased noise impacts and associated mitigation measures.

Once construction is complete, noise impacts from the maintenance and operation of the pipeline would not result in noise impacts to sensitive resources near/within USACE property. As such, no adverse noise effects are anticipated to USACE property during Project operation.

3.12 Transportation

3.12.1 Affected Environment

The Proposed Action would be located within high recreational use areas on USACE property, and during construction, Project use of nearby roads has the potential to impede access to USACE property. A traffic management plan will be developed and coordinated with local agencies regarding the use of public access roads for the Project. Specifically, for the Beltzville Lake property, public roadway access to the Proposed Action would be available via Pohopoco Drive and Station Street/T437B located north of Beltzville Lake and via Penn Forest Road between Wild Creek and Pohopoco Creek.

3.12.2 Environmental Impacts and Proposed Mitigation Measures

Local roadways would be bored (i.e., HDD) or plated to minimize disruption of local access and traffic during construction. Impacts to Penn Forest Road South/T-490 would be avoided by crossing with the HDD. Pohopoco Drive and Station Street/T437B would be crossed using open-cut crossing methods. The roads will be open-cut, and a metal plate will be installed over top of the opened area. The trench will be used for HDD pipe staging and pullback operations. By constructing through the roads in this manner, access to the recreational areas and adjacent homes would not be unnecessarily disturbed.

The roads adjacent to the USACE properties will be bored or plated, allowing passage during construction; therefore, it is not anticipated that the Project would result in adverse traffic and access impacts to USACE property. The Project will also require routine access for operational maintenance purposes following construction, and maintenance operations are not anticipated to result in adverse traffic or access impacts. The No Action Alternative would not result in traffic or roadway access impacts to USACE property as no construction and operation associated with the Project would occur; however, as the Project would likely be rerouted around USACE property, similar, if not possibly greater, transportation impacts could occur outside of USACE-owned property.

3.13 Health and Safety

3.13.1 Affected Environment

The proposed facilities will be designed and constructed to meet or exceed the safety standards established by the USDOT in 49 CFR Part 192. The Project will be constructed in accordance with regulations that govern material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion. The Proposed Action crosses Class 2 and Class 1 areas on USACE property at Beltzville Lake. All Class 1 locations will be considered Class 2 when designing wall thickness as per USDOT 49 CFR Part 192 and the pipeline will be installed with minimum cover of 36 inches. High-strength carbon steel pipe per American Petroleum Institute (API) Specification API 5L will be used for the pipeline. Qualified pipeline contractors will perform construction in accordance with PennEast's specifications. Inspectors hired by PennEast will inspect contractor activities to ensure compliance with company specifications. Non-destructive examination of each pipeline weld will meet or exceed the minimum requirements of 49 CFR Part 192, with weld acceptance in accordance with the latest USDOT referenced edition of API 1104.

Before placing the pipeline into service, pressure testing of the piping will be conducted to verify the integrity of the pipe and welds. Any pipe segment that does not pass the pressure test will be repaired and retested. The piping is designed to allow for the use of electronic in-line inspection tools to detect the presence of metal loss defects, such as corrosion, and pipe deformation defects, such as dents. External corrosion protection will be achieved by means of externally coated pipe and cathodic protection using rectifiers and anodes as required by 49 CFR Part 192. The cathodic protection systems will impress a low-voltage current to the pipeline to offset natural soil and groundwater corrosion potential.

Children's Environmental Health and Safety Risks

Executive Order (EO) 13045, Protection of Children from Environmental Health Risks and Safety Risks, directs Federal agencies to analyze their policies, programs, activities, and standards for environmental health and safety risks that may disproportionately affect children. These can include risks to health and safety attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

In accordance with EO 13045, proximities of schools, recreation areas, childcare facilities, and residential areas to the Proposed Action area were evaluated. No residential areas, schools or childcare facilities are

located on-site at USACE property at Beltzville Lake; however, the Proposed Action is approximately 1 mile northeast of Towamensing Elementary School. In addition, the area crosses recreational facilities that are open to the public and are utilized by children during the summer season. Residential areas where children may live are adjacent to the Proposed Action area on USACE property at Beltzville Lake.

3.13.2 Environmental Impacts and Proposed Mitigation Measures

Public safety is a top concern during all phases of the Project. Prior to construction, signs and exclusionary fencing would be installed along the edge of approved work areas to provide a clearly defined boundary and buffer zone for construction crews and the public. Temporary signage and fencing would be maintained throughout the course of construction. A team of safety professionals would be on-site during site preparation and Project construction to prevent entry of unauthorized personnel, enforce safe working procedures and assess safety of the work zone.

The proposed facilities would be operated and maintained in a manner to ensure that a safe, continuous supply of natural gas reaches each of the delivery points. However, the risk of having to repair or otherwise maintain a pipeline installed by HDD is extremely low. Maintenance activities would include regularly scheduled ground and overflight surveys. Signs, marker posts, aerial markers, and decals would be painted or replaced to ensure that the pipeline locations would be visible from the air and ground. Other maintenance functions may include:

- Minor hand clearing in areas crossed by HDD to maintain a clear line of sight between pipeline markers. There would be no mechanized clearing, vegetation spraying, or earth disturbance in areas crossed by HDD.
- Mowing of upland ROW in accordance with the timing restrictions outlined in the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (May 2013 version) (Plan) (FERC, 2013a) and Wetland and Waterbody Construction and Mitigation Procedures (May 2013 version) (Procedures) (FERC, 2013b);
- Periodic inspection of water crossings and erosion control devices; and
- Periodic internal inspection with in-line inspection tools or "pigs."

Potential for pipeline fugitive leaks to contaminate groundwater and drinking water wells has been raised as a concern. The Project would be designed and operated to avoid and prevent leaks of natural gas. Leak detection and monitoring technology would be employed and maintained as a means to ensure safe, reliable, and efficient delivery of the clean natural gas fuel to the customers of the Project. Leaks represent a loss of the Project's product, and major leaks or incidents that would require shutdown and repair to the pipeline would reduce Project revenues and increase costs. In addition, the pipeline would comply with environmental, safety and transportation regulations of the USDOT, Department of Energy, EPA and FERC licensing and applicable local and Federal permitting.

Any pipeline leaks, if they occur, would be expected to be released in gas phase and only for limited periods until they are observed and repaired. Any such leaks would be almost entirely methane. Methane is a naturally occurring chemical which originates from several different sources and according to government reports a small percentage of natural aquifers may contain some methane. Depending on water chemistry (concentration of salts and other chemicals), methane can dissolve into water up 28 milligrams per liter (mg/L) saturation limit at atmospheric pressure.

There are no Federal and State drinking-water quality standards that set limits for methane in water wells; however, the United States Department of Interior (USDOI), Office of Surface Mining recommends that concentrations less than 10 mg/L methane do require action, other than periodic monitoring to check if the concentrations are changing. If well water is found to have concentrations above this safety

recommendation, safety measures should be taken to avoid ignition, officials should be contacted, and alternatives considered for mitigating the conditions.

In the event of a pipeline leak, methane would be contained and direct impacts to groundwater and water wells would not be expected. The Project pipeline would be installed beneath impermeable, non-porous layers of shale bedrock at the Beltzville Lake crossing. Were a leak to occur, this bedrock layer would trap the methane and minimize migrating upward towards the ground surface. In addition, bentonite grout specifically designed for HDD applications would be installed along the outer perimeter of the pipeline. In the case of a methane leak, this bentonite grout would act as a solid barrier against seepage flow.

With implementation of the above design and operational safety procedures, it is not anticipated that the Project would result in any adverse health and safety impacts. The No Action Alternative would not result in potential health and safety impacts on USACE property as no construction/operation of the Project would occur. However, as the Project would likely be rerouted around USACE property, potential health and safety impacts could be similar or greater outside of USACE property.

Children's Environmental Health and Safety Risks

As noted above, the Project would traverse through recreation areas which would be utilized by children, potentially exposing children to potential health and safety risks during construction of the Project. However, the potential impacts to children resulting from construction of the Project would be minimal and similar to the effects that could occur to adults exposed to the same event/activities. As noted above, Project impacts to water quality, air quality, and noise would likely only occur during construction of the Project. A work plan approved by the USACE and DCNR will be implemented to restrict visitor access to the workspace during construction. Furthermore, as there are no schools or child care facilities on-site, the presence of children during construction is likely to be minimal.

The Project would also HDD underneath Beltzville Lake to avoid and minimize potential surface disturbance to recreational areas (i.e., boating facilities). As most of the Project would be buried underground, the potential for impacts to children from air emissions, noise, and water resources would be minimal to none. With the implementation of a safe work plan, the Project is not likely to result in adverse effects to children's health and safety. The No Action Alternative would not result in health and safety impacts to children as no construction/operation associated with the Project would occur on USACE property; however, the Project would likely be rerouted around USACE property, potentially resulting in additional impacts depending on the route selected and its proximity to areas that schools, day care facilities, etc.

3.14 Environmental Justice

3.14.1 Affected Environment

An environmental justice analysis for the overall Project was performed in accordance with EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations" (EO 12898 1994). The analysis considered whether disproportionately high and adverse impacts on minority or low-income populations, or environmental justice communities, are expected in the surrounding area.

The demography within the affected Project area was evaluated relative to the entire region to identify whether the Project may disproportionately affect potential environmental justice communities. Guidance from the Council on Environmental Quality (1997) states that, "minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or the other appropriate unity of geographic analysis." Race or ethnicity can define a minority population. Therefore, the environmental justice analysis for this Project

analyzed both racial and ethnic composition of the communities in the Project area, as well as income and poverty.

The most current demographics and income information within the affected Project area at the time of the analysis was obtained from the United States Census Bureau's 2013 American Community Survey (1-year estimates), (United States Census Bureau 2013i-m), and the United States Census Bureau's 2005-2009 American Community Survey (5-year estimates) (United States Census Bureau 2009a-f). A secondary analysis, utilizing Census Tracts as a geographical unit, as also conducted. As advised by the United States Census Bureau, 1-year estimates were used to analyze the larger county demographics, while 5-year estimates were recommended for examining specific census tract data.

3.14.2 Environmental Impacts and Proposed Mitigation Measures

Overall, an environmental justice analysis of the Project area was performed based on race, ethnicity, income and poverty level in accordance with EO 12898. Within the Proposed Action area, no potential environmental justice communities were identified based on minority population and none were identified based on income. Taking this information into consideration, the Proposed Action at Beltzville Lake will not disproportionately impact any environmental justice communities and thus mitigation is not required. The No Action Alternative would not result in environmental justice impacts as no construction/operation associated with the Project would occur on USACE property; however, the Project would likely be rerouted around USACE property, potentially resulting in additional impacts to low income or minority populations.

3.15 Socioeconomics

3.15.1 Affected Environment

Information pertaining to socioeconomic impacts from the Bureau of Census, United States Department of Labor and other reliable Federal, State, and local sources was compiled. Two studies were conducted on behalf of the Project. An economic study was conducted by Econsult Solutions and Drexel University School of Economics to specifically address the economic impacts of the larger Project (Econsult Solutions and Drexel University 2015). An Energy Market Savings Report and Analysis was conducted by Concentric Energy Advisors (Concentric Energy Advisors 2015) to evaluate and estimate the potential savings of energy market participants within the larger Project area.

There are no permanent populations or residents that live on USACE property at Beltzville Lake, including staff housing or residential areas. Overnight lodging on watercraft, in self-contained campers, or in any other form is strictly prohibited at Beltzville State Park and on USACE property at Beltzville Lake. Employment on USACE property at Beltzville Lake is mostly limited to the food concession areas, the Environmental Interpretive Center, and the boat rental and launch site.

3.15.2 Environmental Impacts and Proposed Mitigation Measures

As noted above, there are no permanent populations housed or living within USACE-owned/administered lands and property at Beltzville Lake, and workers in the area live off-site. As a result, there will be no impact to housing on USACE property at Beltzville Lake.

Local and regional affected areas are expected to experience temporary population growth during the construction of the Project due to a short-term influx of construction workers from outside the region. Non-local construction workers are not expected to relocate their families to the Project area, reducing the temporary increase in population.

The Project's various direct, indirect, and induced investments in the region are expected to have beneficial economic, employment, and labor income impacts in the affected counties, including in Carbon

County. Carbon County suffers from 2013 unemployment rates above the national average; and will therefore benefit from both the temporary and permanent jobs generated by the Project's construction and operation phases.

Tourists are primarily attracted to visit USACE property at Beltzville Lake to enjoy outdoor activities. Impact minimization recommendations from public land-management agencies have been integrated into the Project design. As previously stated, these efforts include recreational and aesthetic buffers to high traffic areas and specialized restoration techniques based on the existing condition of the areas. Overall, due to the relatively short duration construction period, HDD crossing method employed and continued coordination efforts, the Project is expected to have a negligible impact (both during and post-construction) on the local and regional tourism industry at Beltzville Lake.

The No Action Alternative would not result in socioeconomic impacts as Project construction and operation would not occur on USACE property. However, the Project would likely be rerouted around USACE property, and the construction and operation would likely result in similar impacts to socioeconomics in the area.

4.0 REASONABLY FORESEEABLE FUTURE ACTION AND CUMULATIVE EFFECTS

A cumulative impact analysis has been conducted to identify and describe the potential effects attributable to the proposed Project. The cumulative impact analysis was developed in accordance with the NEPA and addresses the Council of Environmental Quality (CEQ) guidelines (CEQ, 1979; NEPA, 1999). CEQ's regulations define cumulative impacts as the incremental effect of a proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR 1508.7). Although the individual impact of each separate project may be minor, the additive or synergistic effects of multiple projects may be significant.

The selection of a time period and geographic boundaries for the cumulative impacts analysis was based on the natural boundaries of resources of concern (henceforth referred to as the region of influence [ROI]) and the period of time that the proposed Project's impacts may persist.

The ROI varies with the resource affected and cumulative impacts can extend beyond certain terrestrial boundaries. Therefore, to develop a robust and relevant data study, the ROI for the Project's cumulative impact analysis included:

- minor projects, including natural gas wells, residential development, small commercial development and small transportation projects, within 0.25 mile of the centerline;
- major projects, including large commercial, industrial, transportation and energy development projects, within 10-miles of the centerline when discussing land use, recreation, aesthetics and socioeconomics;
- major projects within USGS National Hydrography Datasets (NHD) 10 Hydrologic Unit Code (HUC)-Watersheds or sub-basin areas crossed by the proposed Project; and projects with the potential to result in longer term impacts on air quality (e.g., natural gas pipeline compressor stations) located within an AQCR crossed by the Project.

Municipalities and county planning agencies affected by the Project were consulted to identify past, present and reasonably foreseeable future minor or major projects in the vicinity of the proposed Project that may contribute to cumulative impacts. The cumulative impacts assessment is also based on information about projects obtained from resources such as planning commissions and county and municipal departments, available transportation improvement plans, meeting minutes and communications with county staff, input provided at Project Open Houses, and industry sources. The discussions and research include requests for information on projects that are presently ongoing, and/or are planned and/or approved for implementation. The list of projects near Beltzville Lake that have been identified to date and may be considered in the context of the cumulative impacts analysis is provided in Table 7.

Cumulative effects result from spatial (geographic) and temporal (time) crowding of environmental disturbances. Considering baseline conditions, potential cumulative impacts of the proposed Project as they pertain to geology and soils; groundwater, surface water, and wetlands; vegetation; wildlife; fisheries and aquatic resources; land use, recreation, special interest areas, and visual resources; socioeconomics; cultural resources; and air quality and noise were evaluated. The Project's cumulative impact analysis takes into account these past (i.e., completed in past five years), present and reasonably foreseeable projects located within the ROI as defined above.

The following analysis discusses the potential cumulative impacts of the Project when added to the project proposed for construction within the ROI of the Beltzville Lake crossing.

Table 7: Projects Potentially Contributing to Cumulative Impact Analysis

Project [1]	Location (Township, County, State)	Description	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	Watershed [2]	Air Quality Control Region [3]
Wells [4]								
None								
Pipeline Gathering Systems [5, 6]								
None								
Interstate Natural Gas Pipeline Projects [5]								
Diamond East Pipeline	Lycoming County, Pennsylvania and Luzerne County, Pennsylvania to Mercer County, New Jersey	Williams Company's Diamond East Project is being designed to provide up to one billion cubic feet per day of new natural gas transportation capacity from receipt points along its Leidy Line. It is anticipated that the project will include approximately 50 miles of pipeline looping and horsepower additions at existing Transco compressor facilities.	44.4R2	8.30-miles, East	Not Available	Planning Phase	Pohopoco Creek	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region
Northeast Supply Link	Monroe County, Pennsylvania	Transcontinental Gas Pipe Line Company, LLC constructed 3.17 miles of 42-inch-diameter pipeline loop, extending the existing Leidy Line "D" between Mile Post 40.50 and Mile Post 43.67 in Monroe County, Pennsylvania (Palmerton Loop).	44.5	8.8-miles, East	Not Available	Construction completed in 2013	Pohopoco Creek	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region
Electric Generation And Transmission								
None								
Transportation								
Interchange Road (State Route 209) from Cherry Hill Road to Monroe County Line	Franklin and Towamensing Townships, Carbon County, PA	Pavement resurfacing and rehabilitation	44.5	Intersects Alignment outside of USACE property, West to East	Not Available	Estimated start date of 03/26/2018 (estimated)	Pohopoco Creek	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region
Commercial/Residential Development								
None								

Sources: Business Wire 2013; Clean Air Council 2017; Delaware River Keepers 2017; FERC 2012; FERC 2017; National Pipeline Mapping System 2017; PADEP 2015 (a); PADEP 2017; PennDOT 2017 (a); PennDOT 2017 (b); Pennsylvania Wind Working Group 2006

[1] Includes past (e.g. in-service within past 5 years), present or reasonably foreseeable future projects located within 0.25 miles of the Project centerline for minor projects and within 10 miles for major projects
[2] Watersheds listed are National Hydrography Datasets 10 Hydrologic Unit Code-Watersheds that are crossed by the Project
[3] AQCR = Air Quality Control Region (Title 40: Protection of Environment Part 81, Subpart B - Designation of Air Quality Control Regions)
[4] Wells permitted in counties within 0.25 miles of the proposed Project ROW in PA
[5] Assumes a 50-foot permanent ROW width
[6] eFACTS search conducted for Erosion And Sediment Control General Permits in PA between 01/01/2012 and 03/16/2017

4.1 Geology/Soils

Cumulative adverse impacts on geological or soil resources are not anticipated. At the Beltzville Lake crossing, there would be no surficial impacts along steep slope, and no blasting is anticipated. Unforeseen impacts from events such as landslides, subsidence, flash flooding, or soil liquefaction should be avoided using information acquired during geophysical studies and implemented in the Project plans. In addition, unforeseen impacts should be minimized by the use of proper construction techniques, including proper monitoring by qualified and trained EIs.

Similarly, any cumulative impacts to soils from the Project would be localized and temporary. Impacts to soils would be minimized through consistent implementation of the E&SCP to avoid topsoil mixing, compaction, and erosion. Operations and maintenance (O&M) activities constitute reasonably foreseeable future actions, and any impacts associated with these activities, although direct, should be mostly temporary.

Taking into account all past, present, and likely future impacts, the cumulative impacts to geological resources are expected to be minimal. Reasonably foreseeable future actions associated with the Project include operations and maintenance activities. These activities would be undertaken with the same care, precautions, and research as the proposed Project and would thus have a low likelihood of affecting geological resources.

4.2 Water Resources

Cumulative adverse impacts on water resources are not anticipated. The Project prioritizes the avoidance and/or minimization of impacts to water resources. As previously discussed, a HDD would be used for waterbody crossings at Beltzville Lake, which avoids direct impacts to water resources.

Impacts from construction-related sedimentation and turbidity are not anticipated due to the use of HDD methods; however, if impacts do occur through unanticipated releases, they would be limited to short-term, temporary disturbances that would be corrected in accordance with the HDD Inadvertent Return and Contingency Plan. No long-term impacts are anticipated. Operation and routine maintenance of the pipeline would not affect fishery resources within the Project area, and no permanent impacts to water resources are associated with the crossing at Beltzville Lake.

The realistic, reasonable extent of future impacts resulting from this Project would predominantly focus on facility operations and maintenance activities. These activities would be undertaken with the same care, precautions, and research as the proposed Project and would thus have a low likelihood of affecting water resources. Based on the reasonably foreseeable future actions identified in Table 7, minimal effects to water resources are anticipated as discussed further below.

4.3 Vegetation

By constructing the pipeline across Beltzville Lake and surrounding areas using HDD, vegetation impacts would be limited to temporary impacts in open areas. In total, the construction of the Project would result in the temporary disturbance of approximately 3.07 acres of open land that would be cleared for during construction. There would be no tree clearing along the pipeline above the HDD; however hand clearing of vegetation may be necessary to maintain sight of pipeline markers. Cumulative adverse impacts on vegetation resources are not anticipated.

4.4 Biological Resources

Construction disturbances would likely cause the temporary displacement of wildlife from the construction workspaces and adjacent areas. After construction, wildlife is expected to return to post-construction ROW habitats. Open lands would be cleared for workspace at the proposed crossing. Several

species of wildlife, characterized as habitat generalists, may use these areas for resources resulting in temporary habitat loss. As a result, there may be a cumulative impact to biological resources as a result of the Proposed Action.

4.5 Cultural and Historic Resources

Beltzville Lake and the adjacent USACE Federally-owned property were surveyed for archaeological resources in the spring of 2015. No resources were identified. Although survey access has been granted to the USACE Federally-owned property at Beltzville State Park and adjacent Beltzville Lake; historic architectural surveys are not necessary on the USACE Federally-owned parcels because there are no historic architectural resources within the 400-foot study corridor that are listed in or eligible for listing in, or potentially eligible for listing in the NRHP. As a result, cumulative impacts to archaeological or historic architectural resources at the proposed Beltzville Lake crossing are not anticipated.

4.6 Land Use

In total, construction of the Proposed Action would result in the temporary disturbance of open land on USACE property and no changes in land use would occur. The US 209 Interchange Project consisted of maintenance and repair work, which was not anticipated to result in changes to existing land use. In addition, it is not anticipated that a conversion of existing land use within USACE property at Beltzville Lake would occur as a result of other projects in the ROI. The Project and existing recreational uses at USACE-owned property would continue to function similar to existing conditions, resulting in minimal to no changes to land use. Therefore, the potential cumulative land use effects at Beltzville Lake would be minimal to none.

4.7 Recreational Uses

The Proposed Action and the US 209 project identified in Table 7 involve the installation or maintenance and repair of facilities near recreational areas associated with USACE property at Beltzville Lake. It is possible that construction schedules for the Project and the US 209 project may overlap. However, because US 209 project work will be contained within the limits of the highway, it is unlikely that there will be overlap in workspace area during Project construction at Beltzville Lake.

It is not anticipated that adverse cumulative effects to recreation uses would occur in these areas as effects of both projects will be temporary and constructed at different times. Once construction is complete, recreational uses would resume normal operating conditions and recreational areas would be accessible to the public. Therefore, cumulative effects to recreational users at Beltzville Lake are anticipated to be minimal.

4.8 Aesthetics

Based on the reasonably foreseeable future actions identified in Table 7, it is anticipated that visual cumulative impacts will be minimal. The Proposed Action and other known projects within the ROI would not have any permanent visual impact on any Federal or State listed visually sensitive areas, such as scenic roads, rivers, or natural landmarks as these features are not present in the Project area. Construction of the Proposed Action and other projects discussed in Table 7 would result in temporary impacts to visual and/or aesthetic resources due to the construction equipment and activities. Once construction is complete, these views would return to existing conditions. No long-term adverse cumulative aesthetic effects would occur at Beltzville Lake; and thus, cumulative effects to aesthetics are anticipated to be minimal.

4.9 Air Quality/Climate Change

The projected cumulative impacts on air quality are based on impact assessment, input from Federal, State, and county agencies and public input received at open houses.

Because of construction activities, the Project has been designed to minimize temporary impacts to air quality wherever possible. The operation of heavy construction equipment and its associated exhaust would increase diesel exhaust emissions and would suspend fugitive dust and other construction related particles in the air. The volume of dust emitted would vary depending on the level of activity, specific construction techniques, soil characterizations, and weather conditions. These temporary impacts would be minimized by requirements that the contractor keep machinery adequately maintained and operating. Construction dust and particles would be reduced by implementing fugitive dust control measures (water suppression). There is no anticipated cumulative adverse impact on air quality from the implementation of the Project with other known planned developments. Climate change is the change in climate over time, whether due to natural variability or as a result of human activity, and cannot be represented by single annual events or individual anomalies.

Emissions of greenhouse gases (GHGs) from the Project would not have any direct impacts on the environment in the Proposed Action area. Currently, there is no standard methodology to determine how the Project's relatively small incremental contribution to GHGs would translate into physical effects on the global environment. The GHG emissions from the construction and operation of the Project would be negligible compared to the global GHG emission inventory. Additionally, burning natural gas results in less carbon dioxide equivalent (CO_2e) compared to other fuel sources (e.g., fuel oil or coal). Because fuel oil is widely used as an alternative to natural gas in the region in which the Project would be located, it is anticipated that the Project would result in the displacement of some fuel oil use, thereby potentially offsetting some regional GHG emissions, in terms of CO_2.

Recently, the FERC reaffirmed those potential impacts of GHG emissions attributable to upstream natural gas production are neither proximately caused by natural gas transmission pipelines, and therefore need not be analyzed as indirect impacts, nor are they reasonably foreseeable as contemplated by NEPA and the CEQ regulations, and need not be considered as cumulative impacts, in the Commission's environmental analysis. The Sabine Pass Order reaffirmed that the FERC's approach to analyzing GHGs and climate change impacts is consistent with its responsibility under NEPA and with CEQ's GHG guidance (Sabine Pass Liquefaction Expansion, LLC, et al., 151 FERC ¶ 61,253 at PP 10, 21, 22, 44 [2015]).

4.10 Noise

As shown in Table 7, the proposed projects within the ROI involve maintenance and repair work at existing roadways near Beltzville Lake. In combination with the Proposed Action, impacts to noise are anticipated to be short-term and limited to construction activities. Some noise would be generated as a result of vehicle access and construction trucks hauling equipment along adjacent roadways to USACE property. HDD construction activities at Wild Creek and Pohopoco Creak may exceed the FERC threshold of 55 dBA, L_{dn} at nearby NSAs; however noise buffers may be used to offset any potential noise impacts associated with construction related activities. Heightened noise levels would be intermittent and short-term in nature and would not permanently affect cumulative noise levels.

No permanent changes to noise are anticipated as a result of the Proposed Action or other known projects within the ROI. Based on reasonably foreseeable future actions within the ROI, cumulative effects to noise levels would be moderate in the short-term (i.e., during construction) and minimal to negligible in the long-term (i.e., during operations and maintenance).

4.11 Transportation

With respect to projects identified within the ROI, construction activities associated with road crossings, transportation of construction equipment and additional traffic generated by commuting construction workers may result in temporary impacts on road traffic and cumulatively impact traffic, parking, and transit.

Major interstate highways and the construction ROW would be used to reduce impacts on local roadways. In addition, PennEast would release a Traffic Management Plan for the Project. The plan would identify all roads that would be utilized during the construction period. It is expected that other projects would provide the same information to coordinate efforts and minimize disturbances. The effects of construction on local traffic flow and volume would be temporary. The Project would not contribute to any long-term cumulative impact on transportation infrastructure.

4.12 Health & Safety

Effects on reliability and public safety would be alleviated through the use of the USDOT Minimum Federal Safety Standards in 49 CFR 192, which are intended to protect the public and to avert natural gas facility mishaps and failures. In addition, construction contractors would be required to observe the Occupational Safety and Health Administration Safety and Health Regulations for Construction in 29 CFR 1926. No cumulative impacts on safety and reliability are anticipated to occur as a result of the Proposed Action.

4.13 Environmental Justice

Within the Proposed Action area, no potential environmental justice communities were identified based on minority population or income. Taking this information into consideration, the Proposed Action at Beltzville Lake would not cumulatively impact any environmental justice communities.

4.14 Socioeconomics

Past, present, and reasonably foreseeable future projects could cumulatively impact socioeconomic conditions in the ROI. The projects described in Table 7 could have cumulative effects on population and employment during construction, particularly if more than one project is constructed within the same time frame. Local laborers and materials will be utilized to the extent possible. Local hires could include surveyors, welders, equipment operators, and general laborers. The local supply of construction workers needed for the Project is expected to be derived from workers employed in the construction industry in the affected counties of Pennsylvania. Carbon County contains a substantial construction labor supply that may supplement the specialized construction workers.

Temporary housing would be required for the limited amount of specialized construction personnel not drawn from the local area. Availability of hotels, motels, and campgrounds near the Proposed Action area and current vacancy rates indicate that construction workers should not encounter any difficulty in finding temporary housing near the Project area. The effect of the Project and other projects discussed in Table 7 on temporary housing is negligible.

Based on reasonably foreseeable future actions within the ROI, cumulative effects to socioeconomic levels would be positive and minimal in the short-term and negligible in the long-term.

5.0 ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

The scope of analysis for the NEPA and environmental compliance evaluations associated with the Section 408 review process is limited to the area of the alteration and those adjacent areas that are directly or indirectly affected by the alteration of the Project. As this Draft EA is limited to USACE-administered

parcels affected by the Project at Beltzville Lake, only additional environmental considerations related to those areas are discussed herein.

5.1 Indirect Effects

Indirect Effects as a result of the Project are anticipated to be minimal. For example, as the Project would not increase the amount of housing, the Project would not induce the growth of population or increase population density in the area. As the Proposed Action would cross Beltzville State Park using HDD technologies, no changes in land use would occur. Furthermore, as the entirety of the Proposed Action would be buried underground, minimal to no indirect effects are anticipated to vegetation, biological resources, aesthetics, historic resources, noise, recreational uses, transportation, or water resources in the area.

5.2 Unavoidable Adverse Effects

No unavoidable adverse effects are anticipated as a result of the Proposed Action.

5.3 Irreversible Irretrievable Commitment of Resources

An Irreversible Irretrievable Commitment of Resources occurs when there is a permanent conversion of wetlands/streams, the loss of cultural/historic resources, agricultural resources, soils, or wildlife, and other nonrenewable resources. No tree clearing or loss of habitat is anticipated as a result of the Proposed Action. No conversion of wetland cover types would occur, and there would be no loss of wetland functions and values. No permanent conversion of prime farmland or farmland of state-wide importance would occur. Nonetheless, the Project would result in an irreversible commitment of other natural resources such as fossil fuels and other construction materials during construction of the Proposed Action.

6.0 COMPLIANCE WITH FEDERAL STATUES

As the lead Federal agency for the Project on USACE administered land at Beltzville Lake, the Proposed Action was evaluated in accordance with all applicable Federal regulations and the Proposed Action's compliance status. Table 8 provides a summary of the Proposed Action's compliance with pertinent Federal regulations for the USACE administered land at Beltzville Lake crossed by the Project.

Table 8: Compliance of the Proposed Action with Potentially Pertinent Environmental Protection Statutes and Other Requirements

Federal Statutes	Level of Compliance
Anadromous Fish Conservation Act	Full
Archeological and Historic Preservation Act	Partial
Clean Air Act	Full
Clean Water Act	Partial
Comprehensive Environmental Response, Compensation, and Liability Act	N/A
Endangered Species Act (ESA)	Partial
Estuary Protection Act	N/A
Farmland Protection Policy Act	Full
Federal Water Project Recreation Act	N/A
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act	N/A
National Environmental Policy Act	Partial
National Historic Preservation Act	Partial
Resource Conservation and Recovery Act	N/A
Rivers and Harbors Act	N/A
Submerged Land Act	N/A
Water Resources Planning Act	N/A
Watershed Protection and Flood Prevention Act	N/A
Wild and Scenic Rivers Act	N/A
EOs, Memoranda, etc.	
Protection and Enhancement of Environmental Quality (EO 11514, 1977)	Partial
Protection and Enhancement of Cultural Environment (EO 11593)	Partial
Floodplain Management (EO 11988)	Full
Pipeline Safety Regulations 49 CFR 190-199	Full
Pipeline Safety Statutes 49 USC Chapters 601 & 603	Full
Protection of Wetlands (EO 11990)	Full
Environmental Justice (EO 12898)	Full

Recreational Fisheries (EO 12962)	Partial
Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)	Partial
Stormwater Discharges 40 CFR 122.26 (B)(4), 19 Nov 1990	Partial

Levels of Compliance:

a. Full: having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning.

b. Partial: having met only some of the requirements that normally are met in the current stage of planning.

c. Non-Compliance: violation of a requirement of the statute, E.O., or other environmental requirement.

d. Not-Applicable (N/A): no requirements for the statute, E.O., or other environmental requirement for the current stage of planning.

7.0 SUMMARY

In summary, the USACE has evaluated the environmental consequences of the Proposed Action and subsequently the proposed pipeline Project crossing through USACE-owned property at Beltzville Lake. The USACE also compared the environmental consequences of the Proposed Action with the alternatives evaluated in this EA. The Preferred Alternative chosen is the Proposed Action discussed herein which would result in an easement agreement allowing PennEast to construct and operate a 1.06 mile pipeline through USACE-administered property, which would be installed primarily via the HDD method.

When compared to the No Action Alternative, the Preferred Alternative would result in environmental impacts to USACE properties. However, these impacts would be reduced with implementation of adequate mitigation, which PennEast will continue to coordinate with the USACE for incorporation in the real estate agreement. The proposed mitigation measures would minimize impacts and are anticipated to result in net beneficial impacts on USACE properties exceeding pre-project conditions. Under the No Action Alternative, no mitigation could occur, but would likely require funding from alternate sources with the potential for increased costs for monitoring. As a consequence of implementation of these mitigation measures, potential Project impacts are anticipated to be minimal.

Based on the remainder of the Project's potential effects discussed above, preparation of an Environmental Impact Statement (EIS) is determined to not be necessary. A Finding of No Significant Impact (FONSI) has been prepared, and is provided in the cover of this EA. The Preferred Alternative crossing through USACE-owned/administered properties would minimize, to the greatest extent possible, potentially adverse effects that alternative pipeline routes could cause private landowners, green fields, and currently undisturbed areas. PennEast would be held responsible subject to the regulations and policies to ensure that the mitigation measures discussed herein are implemented and meet their intended purpose over time.

8.0 REFERENCES

Buehler, David A. 2000. Bald Eagle (Haliaeetus leucocephalus), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/506

Business Wire. 2013. Williams Partners Brings Transco Northeast Supply Link Expansion Into Full Service on Time, Ahead of N.E. U.S. Heating Season. Online: http://www.businesswire.com/news/home/20131104006138/en/Williams-Partners-Brings-Transco-Northeast-Supply-Link. Accessed March 16, 2017.

Clean Air Council. 2017. Shale Gas Infrastructure Map and Pollution Reporting Tool. Online: http://tinyurl.com/gasmapPA. Referenced March 16, 2017.

Concentric Energy Advisors. 2015. PennEast Pipeline Energy Market Savings Report and Analysis. Available at: http://penneastpipeline.com/ConcentricEconomicStudy. Accessed on March 30, 2015.

Council on Environmental Quality (CEQ). 1979. Memorandum for NEPA Liaisons. Agency Implementing Procedures Under CEQ's NEPA Regulations. Washington, DC. January 19, 1979.

Cowardin, L.M., Charter, V., Golet, F.C., LaRoe, E.T. 1979. Classification of Wetlands And Deepwater Habitats of the United States, Report No. FWS/OBL-97/31, U. S. Department of the Interior, Fish and Wildlife Service, Washington District of Columbia.

Delaware River Keepers. 2017. Pipeline Projects Currently Planned to Go Through the Delaware River Basin. Online: http://delawareriverkeeper.org/sites/default/files/resources/Factsheets/Pipeline_map.pdf. Reference March 16, 2017.

Eastern Research Group, Inc. 1999. Estimating Particulate Matter Emissions from Construction Operations." EPA Contract 68-D7-0068. http://nepis.epa.gov/Adobe/PDF/9100KK1W.PDF. Accessed JULY 2015.

Ebert, Janet. 2015. PennEast Rare Plant Survey Report- Rare Plant Search of 7 Polygons for PNDI #022407. Prepared for and Submitted to AECOM.

Econsult Solutions and Drexel University. 2015. Economic Impact Report and Analysis: PennEast Pipeline Project Economic Impact Analysis. Available at: http://penneastpipeline.com/economic-impact-analysis/. Accessed on February 17, 2015.

Engineering Circular. http://www.publications.usace.army.mil/Portals/76/Publications/EngineerCirculars/EC_1165-2- 216.pdf

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87- 1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

FEMA. National Flood Hazard Layer. http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cbe088e7c8704464aa0fc34eb99e7f30.

Federal Energy Regulatory Commission (FERC). 2002. Guidelines for Reporting on Cultural Resource Investigation for Pipeline Projects. https://www.ferc.gov/industries/gas/enviro/culresor.pdf

FERC. 2012. Order Issuing Certification and Granting Abandonment for Northeast Supply Link Project. Issued November 2, 2012. Online: https://www.ferc.gov/EventCalendar/Files/20121102175650-CP12-30-000.pdf. Referenced March 16, 2017.

FERC. 2013 (a). Upland Erosion Control, Revegetation, and Maintenance Plan, May 2013 Version. www.ferc.gov/industries/gas/enviro/plan.pdf. Accessed on November 17, 2014.

FERC. 2013 (b). Office of Energy Projects. Wetland and Waterbody Construction and Mitigation Procedures. May 2013. http://www.ferc.gov/industries/gas/enviro/procedures.pdf. Accessed February 2, 2015.

FERC. 2017. Major Pipeline Projects Pending (Onshore). Online: https://www.ferc.gov/industries/gas/indus-act/pipelines/pending-projects.asp. Referenced March 16, 2017.

Markuson, Jeremy. 2014. U.S. Fish and Wildlife Service, New Jersey Ecological Services Field Office, Pleasantville, NJ. Email communication on September 22, 2014, with Susan Quackenbush, URS Corporation, RE: Re: PennEast Pipeline – USFWS NJ Field Office ESA Section 7 Consultation.

Mellon Biological. 2015. Northeast Bulrush Survey Report- PennEast Pipeline Project. Prepared for AECOM.

National Environmental Policy Act (NEPA). 1999. United States Environmental Protection Action, Office of Federal Activities. Consideration of Cumulative Impacts in EPA Review of NEPA Documents.

National Oceanic and Atmospheric Administration (NOAA). 2015. NOAA Fisheries. Proactive Conservation Program: Species of Concern. Updated on February 4, 2015. Available at: http://www.nmfs.noaa.gov/pr/species/concern/. Accessed on February 4, 2015.

National Pipeline Mapping System (NPMS). 2017. Public Map Viewer. Online: https://www.npms.phmsa.dot.gov/. Referenced March 16, 2017.

Pennsylvania Department of Conservation and Natural Resources (DCNR). 2002. Available at: http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_016202.pdfDCNR. 2014 (a). Bureau of Forestry. Agency Response Letter dated September 17, 2014 to Deborah Poppel, URS Corporation, RE: PennEast Pipeline, New 100-mile 30-inch Pipeline, Luzerne, Carbon, Northampton, and Bucks Counties, PA. Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number: 22372. Attachment: Excel spreadsheet, Species Targets by Municipality, Plant and Lepidoptera Information, and Community Information found within Project area in Pennsylvania.

DCNR. 2014 (b). Bureau of Forestry. Agency Response Letter dated September 17, 2014 to Deborah Poppel, URS Corporation, RE: PennEast Pipeline, New 100-mile 30-inch Pipeline, Luzerne, Carbon, Northampton, and Bucks Counties, PA. Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number: 22372. Attachment: Excel spreadsheet, Species Targets by Municipality, Plant and Lepidoptera Information, and Community Information found within Project area in Pennsylvania.DCNR.2015(a). Frances Slocum State Park. Available at: http://www.dcnr.state.pa.us/stateparks/findapark/francesslocum/. Accessed on February 10, 2015.

DCNR. 2015 (b). Hickory Run State Park. Available at: http://www.dcnr.state.pa.us/stateparks/findapark/hickoryrun/. Accessed on February 10, 2015.

DCNR. 2015(c). Delaware Canal State Park. Available at: http://www.dcnr.state.pa.us/stateparks/findapark/delawarecanal/. Accessed on February 10, 2015.

Pennsylvania Department of Environmental Protection (PADEP). 2015 (a). PA Oil & Gas Mapping. GIS. Online: http://www.depgis.state.pa.us/PaOilAndGasMapping/. Referenced March 16, 2017.

PADEP. 2015(c). Land Recycling Cleanup Locations. http://www.pasda.psu.edu/uci/FullMetadataDisplay.aspx?file=LandRecyclingCleanupLocations2015_01.xml. Accessed April 1, 2015.

PADEP. 2017. eFACTS. Authorization Search. Online: http://www.ahs.dep.pa.gov/eFACTSWeb/criteria_auth.aspx. Referenced March 16, 2017

Pennsylvania Department of Transportation (PennDOT). 2017 (a). Road & Bridge Project Construction Map. Online: http://www.projects.penndot.gov/projects/ConstructionMap.aspx. Referenced March 16, 2017.

PennDOT. 2017 (b). State Transportation Improvement Plan Project Map. Online: http://www.projects.penndot.gov/projects/TipVisMap.aspx. Referenced March 16, 2017.

Pennsylvania Fish and Boat Commission (PFBC). 2015 (a).Pennsylvania Fish and Boat Commission, Wild Trout Waters, Natural Reproduction, January 2015. http://fishandboat.com/trout_repro.htm. Accessed January 2015.

PFBC. 2015 (b).Pennsylvania Fish and Boat Commission, Wild Trout Waters. http://fishandboat.com/wild98.htm. Accessed January 2015.

PFBC. 2015 (c).Pennsylvania Fish and Boat Commission, Class A Waters, December 2013. http://fishandboat.com/classa.pdf. Accessed January 2015.

PFBC. 2015 (d).Pennsylvania Fish and Boat Commission, Approved Trout Streams, January 2015. http://www.fish.state.pa.us/troutstreams.htm, http://www.pasda.psu.edu/uci/MetadataDisplay.aspx?entry=PASDA&file=Approved_Trout_Waters2015 01.xml&dataset=963. Accessed January 2015.

PFBC. 2015 (e). Warmwater / Coolwater Fisheries. http://fishandboat.com/images/pages/qa/fishing/wwcw.htm. Accessed on January 27, 2015.

PFBC. 2015 (f). Trout Stocked Streams. http://fishandboat.com/stocked.htm. Accessed January 2015.

PFBC. 2015 (g). Pennsylvania Fishes. http://www.fish.state.pa.us/fishes.htm. Accessed on January 27, 2015.

Pennsylvania Game Commission (PGC). 2008. Allegheny Woodrat (Neotoma magister). The Environmental Review Process in Pennsylvania. Provided with Project consultation from PGC (Taucher 2014).

PGC. 2013. Wildlife in Pennsylvania. Available at: http://www.portal.state.pa.us/portal/server.pt/community/wildlife/9109. Accessed on August 19, 2015.

PGC. 2014. Division of Environmental Planning and Habitat Protection, Harrisburg, PA. Agency Response Letter dated December 17, 2014 to Deborah Poppel, URS Corporation, RE: PennEast Pipeline Company, LLC – Penneast Pipeline Project Revision, State Game Lands Nos. 91, 40, 129, and 168, Large Project PNDI Review, Luzerne, Carbon, Northampton, and Bucks Counties, PA. PGC ID Number: 201408190001 Revised.

PGC. 2015 (a). Division of Environmental Planning and Habitat Protection, Harrisburg, PA. Agency Response Letter dated January 28, 2015 to Bernard Holcomb, URS Corporation, RE: PennEast Pipeline Company, LLC – Penneast Pipeline Project (Revision), State Game Lands Nos. 91, 40, 129, and 168, Large Project PNDI Review, Luzerne, Carbon, Northampton, and Bucks Counties, PA. PGC ID Number: 201408190001 Revision.

PGC. 2015 (b). Division of Environmental Planning and Habitat Protection, Harrisburg, PA. Agency Response Letter dated May 5, 2015 to Bernard Holcomb, URS Corporation, RE: PennEast Pipeline Company, LLC – Penneast Pipeline Project (Revision), State Game Lands Nos. 91, 40, 129, and 168, Large Project PNDI Review, Luzerne, Carbon, Northampton, and Bucks Counties, PA. PGC ID Number: 201408190001 Revision.

PGC. 2015 (c). Division of Environmental Planning and Habitat Protection, Harrisburg, PA. Agency Response Letter dated August 13, 2015 to Deborah Poppel, URS, RE: PennEast Pipeline

Company, LLC– Penneast Pipeline Project (Revision), State Game Lands Nos. 91, 40, 129, and 168, Large Project PNDI Review, Luzerne, Carbon, Northampton, and Bucks Counties, PA. PGC ID Number: 201408190001 Revision.

Pennsylvania Historical and Museum Commission (PHMC). 2008. Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations. Available online at: http://www.portal.state.pa.us/portal/server.pt/community/historic_preservation/3741/forms_and_ guidanc e/418107#target3

Pennsylvania Natural Heritage Program (PNHP). n.d.(a). Nature Serve State Rank. http://www.naturalheritage.state.pa.us/RankStatusDef.aspx.

PNHP. n.d. (b). County Natural Heritage Inventories. Luzerne (2013), Carbon (2005), Lehigh & Northampton (2013), and Bucks (2011) County Reports. Available at: http://www.naturalheritage.state.pa.us/cnhi.aspx. Accessed on February 5, 2015.

PNHP. 2014. Natural Heritage Inventory of All Species in Pennsylvania. Updated November, 2014. Available at: http://www.naturalheritage.state.pa.us/Species.aspx. Accessed on January 31, 2015.

Pennsylvania Wind Working Group. 2006. Wind Farms in Pennsylvania. Online: http://www.actionpa.org/cleanenergy/wind.html. Referenced March 16, 2017.

Shellenberger, Pamela. 2014. U.S. Fish and Wildlife Service, Pennsylvania Ecological Services Field Office, State College, PA. Email communication on October 29, 2014, with Jonathan West and Deborah Poppel, URS Corporation, RE: Penn East Pipeline; USFWS 2014-1013.

Shellenberger, Pamela. 2015. USFWS, Pennsylvania Ecological Services Field Office, State College, PA. Email communication on July 1, 2015 with Jonathan West, Deborah Poppel, and Bernard Holcomb, AECOM, RE: 3 northern long-eared bat hibernacula within ¼ mile of PennEast Project area, PA.

Shellenberger, Pamela and Taucher, John. 2015. Personal communications within meeting at USFWS Pennsylvania Field office with staff Pam Shellenberger and PGC staff John Taucher, URS staff Deborah Poppel and Wildlife Specialists staff Drew Wanke and Chris Voorhees. April 22, 2015. Meeting Minutes within Project technical file.

U.S. Army Corps of Engineers (USACE). 2011. Pennsylvania State Programmatic General Permit-4 (PASPGP-4). US Army Corps of Engineers. Accessed at: http://www.nab.usace.army.mil/Portals/63/docs/Regulatory/Permits/PASPGP-4.pdf.

USACE. 2012 (a). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain Piedmont (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2012 (b). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2014. Corps Lakes Gateway: Beltzville Lake. Last Revised: May, 2014. Available at: http://corpslakes.usace.army.mil/visitors/projects.cfm?Id=E501340. Accessed on February 10, 2015.

United States Army Corp of Engineers (USACE). 2014b. Corps Lakes Gateway: Beltzville Lake. Last Revised: May, 2014. Available at: http://corpslakes.usace.army.mil/visitors/projects.cfm?Id=E501340. Accessed on February 10, 2015.

United States Environmental Protection Agency (EPA). 2015. USEPA Geospatial Data of Regulated Facilities or Cleanup Locations. Last Revised: February 8, 2015. Available at: http://www.epa.gov/envirofw/geo_data.html. Accessed on February 10, 2015.

USEPA. 2013. MOVES 2010b Model. http://www.epa.gov/otaq/models/moves/index.htm. Accessed July 2015.

USEPA. 2008. NONROAD 2008a Documentation: Technical Reports. http://www.epa.gov/otaq/nonrdmdl.htm#techreport. Accessed July 2015.

USEPA. 2007. Accessed at: https://epa.maps.arcgis.com/apps/webappviewer /index.html?id=9ebb047ba3ec41ada1877155fe31356b

United States Fish and Wildlife Service (USFWS). n.d. Listed Animals. Available URL, http://ecos.fws.gov/tess_public/reports/ad-hoc-species-report?kingdom=V&kingdom=I&status=E&status=T&status=EmE&status=EmT&status=EXPE&status=EXPN&status=SAE&status=SAT&mapstatus=3&fcrithab=on&fstatus=on&fspecrule=on&finvpop=on &fgroup=on&header=Listed+Animals. Accessed January 31, 2015.

USFWS, 2006. Indiana Bat (Myotis sodalis) Fact Sheet. Last Revised: December 2006. Available URL: http://www.fws.gov/midwest/endangered/mammals/inba/pdf/inbafctsht.pdf.

USFWS, 2007 (a). Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision. USFWS, Fort Snelling, MN.

USFWS. 2007 (b). National Bald Eagle Management Guidelines. Final, May 2007. USFWS, 2015. Range Wide Indiana Bat Summer Survey Guidelines. April 2015. http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html.

United States Geological Survey (USGS). 2013. Watershed Boundary Dataset Facts. http://nhd.usgs.gov/wbd_facts.html. Accessed on January 28, 2015.

Watershed Boundary Dataset for Hydrologic Unit Code (HUC)-10, Pennsylvania and New Jersey. Online: http://nhd.usgs.gov/wbd.html. Referenced June 24, 2015.

Wildlife Specialists, 2015 (a). Indiana and Northern Long-eared Bat Habitat Assessment Report and Phase 2 Mist-net Study Plan for PennEast Pipeline Project. Prepared for URS Corporation and submitted to USFWS.

Wildlife Specialists, 2015 (b). Indiana and Northern Long-eared bat Mist Net Survey Report. PennEast Pipeline Project. Prepared for URS Corporation. July 2015.