

**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
FRANCIS E. WALTER DAM AND RESERVOIR)**

May 2017

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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
CO ₂	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
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
NAAQS	National Ambient Air Quality Standards
NHD	National Hydrography Datasets
NJ	New Jersey
NMFS	National Marine Fisheries Services
NO _x	nitrogen oxides
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive areas
NSR	New Source Review
NOAA	National Oceanic and Atmospheric Administration
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 Francis E. Walter Reservoir 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, LLC's (PennEast's) application for an easement allowing it to construct, install, and operate a portion (totaling approximately 0.11 mile) of the PennEast Pipeline Project (Project) that traverses land associated with the Francis E. Walter Reservoir and Dam and adjacent USACE-owned and administered property in Bear Creek Township, Luzerne 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 the Francis E. Walter Reservoir are part of the larger PennEast Pipeline Project that extends beyond USACE's Francis E. Walter 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 Francis E. Walter Reservoir and Dam 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 PennEast Pipeline Project extends for many miles on either side of the USACE project boundary at the Francis E. Walter Reservoir. 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 Francis E. Walter Reservoir Section 408 approval 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 Francis E. Walter Reservoir 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/FEW_PN_April-21-2016.pdf.

1.2 Purpose and Need

The purpose of the Francis E. Walter Reservoir 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 Francis E. Walter Reservoir. The Proposed Action would include a 50-foot wide easement that would cross USACE property for a total length of approximately 0.11 mile, including a 444 foot crossing of the Lehigh River. The proposed PennEast Project would be located adjacent to Buckeye Partners, LP (Buckeye's) existing ROW on USACE property at the Francis E. Walter Reservoir.

1.4 Project Location

The proposed Project's Mainline Route crosses Francis E. Walter Reservoir (Lehigh River) between Mile Post (MP) 23.0 and 23.1 in Bear Creek Township in Luzerne County and Kidder Township in Carbon County, Pennsylvania. The Francis E. Walter Dam is a 1,800-acre USACE project consisting of an 80-acre reservoir and recreational area. The proposed Project would cross the Lehigh River approximately 2.8 river miles upstream of the Francis E. Walter Dam. The Lehigh River is affected by the dam and is typically flooded at the proposed crossing location. A Project overview map is provided as Appendix A to this EA.

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 nominal 100-foot-wide construction corridor. Additional temporary workspace (ATWS) is required in some areas to support special construction techniques. A Site-Specific Crossing Plan is provided as Appendix B that illustrates the temporary construction ROW, the permanent easement and ATWS at the proposed crossing of Francis E. Walter Reservoir.

Construction of the Project through the Lehigh River/Francis E. Walter Reservoir will occur using the dam and pump open cut method for a total crossing length of approximately 444 feet. This construction method would involve the diverting water from the upstream side around the construction area, excavation of the pipeline trench across the waterbody, installation of a prefabricated pipeline segment, backfill of the trench with excavated material, and removal of the dam.

The crossing of the Francis E. Walter Reservoir will be constructed between mid-October and February, when the reservoir levels are drawn down and water levels are typically the lowest. During this time, the stream will be narrower and shallower. These conditions would allow PennEast to construct the crossing within 48 hours and minimize the possibility of downstream sedimentation and impacts to wild trout migration. Additionally, recreational impacts to fishing and boating would be reduced by constructing during low-flow conditions in late fall or during the winter. In addition, the timing of construction and operation of the Proposed Action on USACE-administered land is dependent on PennEast obtaining the necessary State and Federal approvals/permits.

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's 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.

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 Francis E. Walter location (between MP 23.0 and 23.1). To the extent practical, Appendix D contains correspondence with these agencies that is specific to the crossing of the Francis E. Walter/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. 2014I013) on September 30, 2014. 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 1,000 feet from MP 23.1). These letters are included in Appendix D.

USFWS species of concern potentially located in the vicinity of Francis E. Walter Dam project area include the Indiana bat, northern long-eared bat and the bald eagle. On October 7, 2015, PennEast provided USFWS with a report of the survey results for the Project for these species. A summary of the survey status and results for the identified listed species are included in Table 4 of this EA.

Appendix D also contains correspondence from PennEast providing an updated route alignment to the USFWS on October 24, 2014 (the updated route was between MP 11 and MP 35, which includes the crossing of the Francis E. Walter Reservoir crossing). An additional route update that included the area of this crossing was provided to USFWS on July 24, 2015 (consisting of a deviation from MP 22.4 to 23.3). 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). Once this documentation is received, 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). A route update that included the area of this crossing was provided to NMFS on July 24, 2015 (consisting of a deviation from MP 22.4 to 23.3). 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. In December of 2015, NMFS advised which waterbodies have in-water work restrictions to protect anadromous fishes, which identify a timing restriction along lower portions of the Lehigh River (refer to Appendix D). NMFS did not list any species of concern potentially located in the vicinity of the Francis E. Walter Dam 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 to the DCNR on October 24, 2014 (the updated route was between MP 11 and MP 35, which includes the crossing of the Francis E. Walter Reservoir crossing). An additional route update that included the area of this crossing was provided to DCNR on July 24, 2015 (consisting of a deviation from MP 22.4 to 23.3). 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. 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. These do not apply to the Francis E. Walter Reservoir location.

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 Francis E. Walter Reservoir 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.

Coordination and consultation with DCNR is ongoing; no species or resources under DCNR's jurisdiction occur in the vicinity of the Francis E. Walter Reservoir crossing. Once consultation is complete, AECOM anticipates DCNR will provide a letter indicating completion of coordination for the entire proposed Project. Once received, 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 October 24, 2014 (the updated route was between MP 11 and MP 35, which includes the crossing of the Francis E. Walter Reservoir crossing). The PFBC responded to this request on November 10, 2014. An additional route update that included the area of this crossing was provided to PFBC on July 24, 2015 (consisting of a deviation from MP 22.4 to 23.3), and PFBC responded to this request in August of 2015. As noted above, PFBC also attended the meeting in November 2014 along with representatives from DCNR.

Updated route alignments not affecting this crossing were provided by PennEast throughout 2015 and 2016, and PFBC provided responses to these updates.

The only PFBC species of concern potentially located in the vicinity of the Francis E. Walter Dam is the timber rattlesnake; therefore, as detailed in Section 3.5, below, PennEast conducted surveys for this species, and, after the Phase 2 spring survey completed in 2016, no timber rattlesnakes or dens were identified in the area of this crossing.

Consultation has been ongoing as PennEast advised PFBC of its survey progress for special status species throughout 2015. PennEast provided PFBC with its initial survey report on October 7, 2015. In November of 2015, PFBC responded to the October 2015 survey report; also in November 2015, PennEast supplemented its initial survey results. PFBC responded to this report in December of 2015. In addition, in response to a request from PennEast, PFBC provided a summary of the threatened and endangered species impact review of species under the jurisdiction of PFBC (June 15, 2016, and included within Appendix D). PennEast submitted its Timber Rattlesnake Phase 2 survey report on August 1,

2016. On August 31, 2016, PFBC provided findings of “no impact” to timber rattlesnakes in Luzerne County (including the area of the proposed crossing of the Francis E Walter Reservoir).

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 in September of 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 October 24, 2014, PennEast advised PGC of a proposed route alignment (that included the area of the proposed crossing), and a response was received on December 17, 2014. An additional route update that included the area of this crossing was provided to PGC on July 24, 2015 (consisting of a deviation from MP 22.4 to 23.3), and PGC responded to this request on August 13, 2015.

Updated route alignments not affecting this crossing were provided to PGC during 2015 and 2016, and letters were received from the PGC in response to these updates. In addition to written correspondence, meetings and conference calls have been held to facilitate coordination with PGC regarding the project.

PGC listed the northern long-eared bat and eastern small-footed bat as species of concern potentially located in the vicinity of the Francis E. Walter Dam project area. However, the PGC had deferred comments on potential impacts to northern long-eared bats to the USFWS as that is a species that was added to federal “threatened” status during 2015 (see email correspondence dated May 28, 2015 within Appendix D). PennEast provided PGC with survey results for species under PGC’s jurisdiction in October of 2015; the closest species were located approximately one-mile from the proposed crossing of the Francis E. Walter Reservoir. A supplemental report was provided in November of 2015, and no subject species were identified in the vicinity of this crossing.

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 Francis E. Walter Dam, 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 Francis E. Water Reservoir in letters dated October 24, 2014 (in general) and October 25, 2014 (to provide a summary of archeological resources in the vicinity of the updated route). These transmittals included electronic shapefiles and maps of the reroutes, respectively. The PA SHPO responded to these submittals in a letter dated December 4, 2014, in which they acknowledged the route changes and reiterated that the methodologies for identifying archaeological sites and historic architectural properties presented in the scoping letter had been approved. PennEast notified the PA SHPO of additional Project reroutes that included a route change at Francis E. Walter Dam in a letter dated July 27, 2015, which also included maps of the reroutes. The PA SHPO responded to PennEast's July 27, 2015 route update by letter dated September 11, 2015, stating that it was their understanding that reports of cultural resources investigations for the project would be submitted for their review.

Areas covered by Phase I archaeological survey at Francis E. Walter 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 Francis E. Walter 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 (refer to Appendix D for the transmittal of that report). No archaeological sites were identified on USACE holdings at Francis E. Walter 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 I* was submitted to the PA SHPO on March 18, 2016. This report documented Phase I survey efforts and recommendations on two Native American archaeological sites identified on USACE holdings at Francis E. Walter Reservoir: sites 36LU0338 and 36LU0339. Both sites were identified outside of but adjacent to the Project's area of potential effects (APE). The PA SHPO commented on the report in a letter dated April 14, 2016 (included in Appendix D). The PA SHPO agreed with the avoidance plan for site 36LU0338, and that site 36LU0339 was not eligible for listing on the National Register of Historic Places.

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.

Tribes	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 Francis E. Walter 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 over the two archaeological sites identified on USACE holdings at Francis E. Walter 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 October 24, 2014 and July 24, 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 the Francis E. Walter Reservoir including the No Action Alternative and the Action Alternative were considered. The sections below describe the alternatives considered at the Francis E. Walter Reservoir 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 Project would not be constructed on USACE owned/administered property at Francis E. Walter Reservoir. 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 Francis E. Walter Reservoir 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 the reservoir. 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.

The No Action Alternative would avoid Project-related environmental impacts on the USACE-owned/administered Francis E. Walter Reservoir, 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 the Reservoir.

While the No Action Alternative would not preclude PennEast from finding alternative routes to provide additional natural gas transport services, reroutes around the reservoir would not represent the least environmentally damaging practicable alternative. Alignments around Francis E. Walter Reservoir 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 Action Alternative

2.2.1 Route Alternatives

Since the Project was initiated in the spring of 2014, several key alternative routes have been evaluated. Variations to the Francis E. Walter Reservoir crossing were implemented in the following key route alternatives:

1. Original Route
2. Alternative 2 to Original Route with NJ Loop
3. November 2014 Preferred Route
4. Proposed Action

Alternative 1 – Original Route

The originally proposed Project alignment, or the “Original Route,” was designed to bring locally produced Marcellus Shale gas from UGI’s gathering system in northeastern Pennsylvania, through 29 municipalities, to the proposed Transco Trenton-Woodbury interconnect in Mercer County, New Jersey, allowing PennEast to serve customers in metropolitan East Coast markets. Multiple factors were considered when evaluating potential alignments. The Original Route was aligned to avoid standing structures, densely populated areas and planned development projects thereby minimizing the potential cumulative impacts of the pipeline. The Original Route’s centerline crossed southwest of the Francis E. Walter Dam through densely forested areas located on USACE property.

Alternative 2 - Alternative 2 to Original Route with NJ Loop

Further analysis of environmental constraints was conducted, resulting in Alternative 2 to Original Route with NJ Loop (Initial Preferred Route). Alternative 2 to Original Route with NJ Loop shifts the alignment from MP 70 to MP 90 from Bucks County, Pennsylvania to Hunterdon County, New Jersey, with only a minor shift in the alignment at the Lehigh River. Alternative 2 to Original Route with NJ Loop was preferable to the Original Route because it traversed less densely populated areas, reduced impacts to wetlands and waterbodies and, at the same time, continued to allow the Project to deliver to all desired interconnections. Alternative 2 to Original Route with NJ Loop crossed southwest of the Francis E. Walter Dam through densely forested areas, similar to the Original Route; however, Alternative 2 to Original Route with NJ Loop crossed a wider expanse of the Lehigh River than the Original Route.

Alternative 3 – November 2014 Preferred Route

Along the November 2014 Preferred Route, reroutes were considered that incorporated co-location opportunities. Along the alignment, the centerline was shifted to co-locate with various utility ROWs, including gas pipeline and electric transmission. Co-location of utility corridors reduces the amount of vegetation clearing required and concentrates environmental impacts to a smaller area. Between MP 18.1 and MP 40, an area that encompasses USACE property associated with the Francis E. Walter Dam, the pipeline alignment was shifted to co-locate with Buckeye’s existing pipeline ROW. Co-locating with Buckeye’s existing corridor would not only reduce the overall length of the entire route, but it would also minimize land use impacts associated with the Project. The November 2014 Preferred Route crossed the Lehigh River northeast of the Francis E. Walter Dam at the Francis E. Walter Reservoir to the west of the Buckeye ROW.

Alternative 4 – Proposed Route

Based on comments received during the formal scoping process, ongoing dialogue with Federal, State, regional and local agencies, landowners, and the results of field surveys and engineering analyses, other alternatives to the proposed pipeline alignment were evaluated.

The Proposed Route would cross the Francis E. Walter Reservoir northeast of the Francis E. Water Dam; however, slight variations were implemented since the November 2014 Preferred Route. Due to steep slopes, constructability issues, and impacts to streams, wetlands and cultural resources, the centerline was shifted approximately 200 feet to the east of the Buckeye corridor between MP 22.7 through MP 23.2.

Moving the alignment to the east of the Buckeye ROW avoids constructing the Project along the side slope of Stony Creek, a PADEP designated high quality (HQ) stream, and avoids two streams and a wetland that were crossed by the November 2014 Preferred Route. Potential impacts to two cultural sites discovered through archaeological field studies would also be avoided.

Based on the various evaluations performed, the crossing location outlined in Alternative 4 is the preferred option for crossing Francis E. Walter Reservoir. Hereinafter, Alternative 4 is referred to as the

Proposed Action.

2.2.2 Construction Alternatives

Several conventional open-cut and trenchless construction techniques were evaluated to construct the Project across the Francis E. Walter Reservoir including:

- HDD
- Direct Pipe
- Flume Crossing Method (Preferred Construction Alternative 1)
- Dam and Pump Crossing Method (Preferred Construction Alternative 2)

Horizontal Directional Drilling

The HDD crossing method is not the preferred construction alternative at the Francis E. Walter Reservoir. Directional drilling is an advanced boring method that requires the drilling of a small diameter hole, or pilot hole, 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.

This trenchless technology allows for installation of the pipeline without surface impacts over the length of the bore. Direct impacts to wetlands, waterbodies, and forested areas may be avoided; however, 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. Drilling mud is necessary for HDD construction. It provides a seal for the drilled and reamed hole, functions to provide lubrication for the downhole assembly, and transports drilled cuttings back to the rig. Typically, the mud is contained within the borehole and the drilling mud 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 inadvertent returns 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. Although the drilling fluid is comprised of water and bentonite, an inert clay, an unanticipated release can result in sedimentation in wetlands and streams, increased traffic within protected resources for cleanup efforts, and overall Project delays.

Geotechnical studies were conducted to evaluate the underlying substrate at the Lehigh River crossing and determined a HDD is not feasible at this location. The proposed crossing is sited in a steep sided valley, and HDD launch and receiving pits would need to be sited at an elevation of 100 feet (or more) above the water’s surface to conceive a feasible trajectory for a successful HDD bore. Additionally, the former Lehigh River channel may have deeply cut into the bedrock, leaving a deposit of soil alluvium. This would require a relatively steep trajectory to accommodate the steep hillside and to avoid the alluvium while drilling. Finally, the underlying geologic formation, through which the majority of the boring would pass, is composed of massive sandstones with friable siltstones and shales. The process of transitioning between hard massive units with friable shale layers would make it difficult to keep the HDD bit at the desired elevation during the drilling and increases the chance of an unsuccessful HDD bore.

To find a suitable crossing where HDD could be utilized across Francis E. Walter Reservoir would result in substantial deviations from the corridor in which the Buckeye ROW is located. As a result, the HDD

method is not a preferred alternative.

Direct Pipe

The direct pipe crossing method is not the preferred construction alternative at the Francis E. Walter Reservoir. The direct pipe is a single-step method for pipe installation that combines the methods of micro-tunneling and HDD. Prefabricated pipe is welded to a remote controlled, steerable micro-tunnel boring machine. As the micro-tunnel machine bore excavates the soil or rock, a pipe thruster pushes the pipeline and attached micro-tunnel machine forward. This method was not considered feasible given the topography and steep slopes at the crossing location, similar to issues discussed above for HDD.

Flume Crossing Method (Preferred Construction Alternative 1)

The Lehigh River crossing can safely and quickly be constructed using the flume crossing method. The flume crossing method involves diverting the flow of the stream across the construction site through one or more flume pipes placed in the stream. The first step in the flume crossing method would involve placing a sufficient number of adequately sized flume pipes in the stream to accommodate the highest anticipated flow during construction. After placing the pipes in the stream, sand or pea gravel bags would be placed in the stream upstream and downstream of the proposed trench. The bags serve to dam the stream and divert the stream flow through the flume pipes, thereby isolating the stream flow from the construction area. After the temporary dams are constructed and the workspace dewatered, temporary equipment matting will be placed on the stream bed to minimize impacts during construction.

Backhoes located on both banks of the stream would excavate a trench under the flume pipe in the isolated streambed. Spoil excavated from the stream trench would be placed or stored a minimum of 10 feet from the edge of the waterbody or in ATWS as necessary. Once the trench is excavated, a pre-fabricated segment of pipe would be installed beneath the flume pipes. The trench would then be backfilled with native spoil from the streambed. Clean gravel or native cobbles would be used to backfill the top 12 inches of the trench. If trench dewatering is necessary, the trench water would be discharged into an energy dissipation/sediment filtration device, such as geotextile filter bag or straw bale structure, away from the water's edge to prevent heavily silt-laden water from flowing into the waterbody. Construction details are illustrated on the Typical Flume Waterbody Crossing figure in Appendix C.

A completed stream crossing using the flume method would be stabilized, and the temporary equipment matting would be removed before returning flow to the channel. Original streambed and bank contours would be re-established, and mulch, jute thatching, or bonded fiber blankets would be installed on the stream banks. If the flume technique is used, stream banks would be stabilized before removing the flume pipes and returning flow to the waterbody channel. Seeding of disturbed stream approaches would be completed in accordance with FERC's Plan and Procedures after final grading, weather and soil conditions permitting. Where necessary, slope breakers would be installed adjacent to stream banks to minimize the potential for erosion. Sediment barriers, such as silt fence and/or straw bales would be maintained across the ROW until permanent vegetation is established.

Dam and Pump Crossing Method (Preferred Construction Alternative 2)

The dam and pump crossing method may be used to construct the crossing, depending upon site conditions at the time of the construction. The dam and pump crossing method involves constructing temporary sand or pea gravel bag dams upstream and downstream of the Proposed Action crossing site while using a high capacity pump to divert water from the upstream side around the construction area to the downstream side. Energy dissipation devices would be placed on the downstream side at the discharge point to prevent streambed scour. After installing the dams and commencing pumping, a portable pump (separate from that pumping the stream flow around the construction area) may be used to pump standing water from between the dams into a dewatering structure consisting of straw bales/silt fence or into a filter bag located away from the stream banks, thereby creating a dry construction area. After the temporary dams are constructed and the workspace dewatered, temporary equipment matting will be placed on the stream bed to minimize impacts during construction.

Backhoes would then excavate a trench across the stream. Spoil excavated from the trench may be stored in the dry streambed adjacent to the trench or in a straw bale/silt fence containment area located a minimum of 10 feet from the edge of the stream banks. Leakage from the dam, or subsurface flow from below the streambed, may cause water to accumulate in the trench. As water accumulates in the trench, it may be periodically pumped out and discharged into the dewatering structure located away from the stream banks. After trenching across the streambed is completed, a prefabricated segment of pipe would be installed in the trench. The streambed portion of the trench would be immediately backfilled with streambed spoil, and the temporary equipment mats removed. Construction details are illustrated on the Typical Dam and Pump Waterbody Crossing figure in Appendix C.

The Lehigh River would be stabilized before returning flow to the channel. Original streambed and bank contours would be re-established, and mulch, jute thatching, or bonded fiber blankets would be installed on the stream banks. Once restoration of the streambed is complete, the dams would be removed and normal flow would be re-established in the stream. Seeding of disturbed stream approaches would be completed in accordance with FERC's Upland Erosion Control, Revegetation and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures) after final grading, weather and soil conditions permitting. Where necessary, slope breakers would be installed adjacent to stream banks to minimize the potential for erosion. Sediment barriers, such as silt fence and/or straw bales would be maintained across the ROW until permanent vegetation is established.

The greatest benefit to using dry crossing techniques is the speed at which the crossing, and therefore the overall Project, can be constructed. One of the goals of open cut crossings is to complete all in-stream construction (trenching, pipe installation, backfill, and streambed restoration) within 48 hours, a rate much faster than trenchless crossings. After diverting stream flow with the dam and pump method, PennEast plans to dig the trench, install the pipe, backfill, grade, and stabilize the watercourse crossing. No in-stream work would take place until all pipe and materials are in place and ready for construction. The stream banks and a 50-foot buffer to each bank would be stabilized with erosion control fabric within 48 hours of completing the crossing. Overall Project construction would occur in an assembly-line fashion, and completing stream crossings within 48 hours contributes to construction efficiency. Reducing the duration of Project earth disturbance reduces potential environmental impacts. Implementing dry crossing methods also eliminate the possibility of inadvertent returns of drilling fluids that can occur with trenchless techniques.

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 at Francis E. Walter Reservoir and surrounding USACE owned/administered property is located in the Glaciated Pocono Plateau Section of the Appalachian Plateaus Physiographic Province of Pennsylvania (DCNR, 2000). The Glaciated Pocono Plateau Section of the Appalachian Plateaus Province is a broad upland underlain by erosion-resistant sandstones that are relatively flat lying. Relief on the upland is generally less than 200 feet, but can be as much as 600 feet where small hills rise above the general level of the upland. Elevations on the upland range from 1,200 to 2,320 feet.

A portion of the Proposed Action would be located adjacent to an existing Buckeye pipeline corridor and no known 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 at Francis E. Walter Reservoir. Therefore, no listed unique or unusual geologic sites are located within the Project ROW on USACE-owned property at Francis E. Walter Dam and Reservoir.

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 0 to 72 inches in depth. Table 1 lists the approximate depths to bedrock on USACE owned/administered property at Francis E. Walter Reservoir. As shown, shallow bedrock may be encountered along much of the Proposed Action area ROW. As such, some rock removal will 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 would 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. Appropriate erosion control measures, as described in the E&SCP, will be employed 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 have a low potential for compaction. However, no USACE-owned or administered land at the Francis E. Walter Reservoir crossing is currently in use for agricultural production, so potential impacts resulting from compaction are anticipated to be minimal. 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.

Table 1: Shallow Depth to Bedrock Crossed by the Pipeline

County	Begin MP ¹	End MP ¹	Soil Type	Minimum Depth to Bedrock ² (in)	Length of Pipe in Rock ³	
					(feet)	(miles)
Luzerne	22.9	22.9	Oquaga and Lordstown extremely stony silt loams steep	20	467	0.1
Luzerne	22.9	23.0	Chenango gravelly loam, 8 to 15 percent slopes	60	226	0.0
Luzerne	23.0	23.0	Linden soils	72	112	0.0
Luzerne	23.0	23.0	Water	72	84	0.0
Carbon	23.0	23.1	Water	0	147	0.0
Carbon	23.1	23.3	Very stony land, 25 to 120 percent slopes	0	1,263	0.2

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. 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 MP ¹	End MP ¹	Soil Map Unit Name	Prime Farmland ²	Slope ³	Compaction Potential ⁴	Drainage Classification ⁵	Revegetation Potential ⁶	Erosion Potential ⁷
Luzerne	Bear Creek Township	22.9	23	Chenango gravelly loam, 8 to 15 percent slopes	Farmland of statewide importance	12	Low	Well Drained	Poor	Severe
Luzerne	Bear Creek Township	23	23	Water	Not prime farmland		Not Available	Not Available	Not Available	Not rated
Luzerne	Bear Creek Township	23	23	Linden soils	All areas are prime farmland	2	Low	Well Drained	Good	Slight
Carbon	Kidder Township	23	23.1	Water	Not prime farmland		Not Available	Not Available	Not Available	Not rated
Carbon	Kidder Township	23.1	23.3	Very stony land, 25 to 120 percent slopes	Not prime farmland	40	Low	Well Drained	Poor	Severe

Notes:

- 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. 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.
- As defined by the USDA
- Inclination of the soil from horizontal and measured in percent
- Potential for mechanical activities to company soils
- High = poorly drained, very poorly drained; Moderate = somewhat poorly drained, moderately well drained; Low = well drained, somewhat excessively drained, excessively drained
- Revegetation Potential estimated using NRCS Non-irrigated Capability Class. Capability Class 1 = Good, 2 = Fair, ≥ 3 = Poor
- Erosion Potential estimated using NRCS Potential Erosion Hazard for Road/Trail.

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 Francis E. Walter Reservoir includes soils designated as prime farmland and farmland of statewide 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 Francis E. Walter Reservoir, prime farmland soils are either forested or directly adjacent to the Lehigh River providing the public with recreational opportunities.

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 indicates 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 Francis E. Walter Reservoir. 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 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, disturbed areas will be monitored and erosion control measures will be maintained. 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 prime farmland 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 statewide importance within the Proposed Action area through use of BMPs during construction and allowing the ROW to be restored to preconstruction conditions (non-forested) following installation of the pipeline.

3.2 Water Resources

Francis E. Walter Dam is a 1,800-acre project consisting of an 80-acre reservoir and recreational area located in Luzerne and Carbon counties, Pennsylvania and managed by USACE. No USACE-operated recreational facilities are present; however, a boat launch area exists and the site is open to picnicking, hiking, and fishing.

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 Aquifer, and the Duncannon Member of Catskill bedrock aquifer formation in Luzerne County and the Spechty Kopf Formation bedrock aquifer formation in Carbon County. 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. No springs or seeps were identified in the Proposed Action Area during field surveys.

Floodplains

The Proposed Action area crosses 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 560-feet of FEMA-designated 100 year floodplain on that exists on both sides of the Lehigh River crossing (FEMA, 2017b).

Executive Order 11988 (Floodplain Management)

According to FEMA (2017a), Executive Order 11988 (Floodplain Management) requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

The guidelines provide an eight-step process that agencies should carry out as part of their decision-making on projects that have potential impacts to or within the floodplain. These eight steps are summarized below along with a statement of compliance with each, as applicable.

1. *Determine if a proposed action is in the base floodplain (that area which has a one percent or greater chance of flooding in any given year).*

The PennEast Mainline Route crosses the 100 year floodplain on both sides of the Lehigh River in the vicinity of the Francis E. Walter Reservoir.

2. *Conduct early public review, including public notice.*

The public has been notified both regarding this crossing as well as regarding the PennEast Project as a whole. The opportunity for public review has occurred through the Project's applications to FERC, PADEP, and the USACE. For example, 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/FEW_PN_April-21-2016.pdf.

3. *Identify and evaluate practicable alternatives to locating in the base floodplain, including alternative sites outside of the floodplain.*

Section 2.0 of this EA describes the alternatives considered, including the avoidance of the Francis E. Walter Reservoir crossing. As detailed in Section 2.1, avoiding this crossing location was not practicable based on numerous factors.

4. *Identify impacts of the proposed action.*

Potential impacts of the proposed action are evaluated in Section 3.0 of this EA. The impacts at this crossing will be short term.

5. *If impacts cannot be avoided, develop measures to minimize the impacts and restore and preserve the floodplain, as appropriate.*

For impacts that cannot be avoided, mitigation measures have been proposed. Regarding the crossing of the floodplains, minimization techniques include:

- the proposed use of a dry crossing method (which will minimize sedimentation and the duration of the crossing);
- the pipeline will be buried underground, and preconstruction contours and elevations will be restored following pipeline installation; and
- no aboveground facilities will be located within the floodway.

Therefore, no changes to FEMA designated flood hazard areas or flow patterns are anticipated, and there would be no increased flood risks to structures, human health, safety, or welfare.

6. *Reevaluate alternatives.*

Based on the minimization and mitigation measures described above, no alternatives are preferable compared to the proposed route.

7. *Present the findings and a public explanation.*

The evaluations and assessments included within this EA are available for public review. The USACE will issue its decision on the permit as a public explanation.

8. *Implement the action.*

Upon receipt of all permits and approvals, the PennEast Pipeline project will be constructed, including the crossing of the Francis E. Walter Reservoir.

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 Northcentral and Northeast Regional Supplement (USACE, 2012) in the 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). No wetlands are located within the Project area at the proposed Francis E. Walter Dam project property crossing. Therefore, no impacts to wetlands are anticipated as a result of the proposed crossing.

Waterbodies were delineated during field surveys conducted in the spring and summer of 2015. Waterbodies located within the 400-foot study corridor of the Proposed Action area are presented in Table 3. 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, and 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 PennEast'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 PennEast's 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.

Table 3: Waterbodies within 400-Foot Study Corridor in Proposed Action Area at Francis E. Walter Reservoir

Waterbody ID	USGS Stream Name	Flow Regime	Crossing Method	Latitude	Longitude	FERC Class ₁	PA Code Chp 93 Designation ₂	PFBC Status ³	Temp. ROW (acres)	Perm. ROW (acres)
052115_JC_1001_P_MA	Lehigh River	Perennial	Dry Crossing	41.13036	-75.689558	Major	HQ-CWF, MF	Wild Trout Water (Natural Reproduction)	0.504	0.510
<p>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.</p> <p>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.</p> <p>³ Pennsylvania Fish and Boat Commission designated wild trout waters includes stream sections supporting naturally reproducing populations of trout.</p>										

The No Action Alternative would not result in impacts to groundwater resources on USACE property as no construction/operation of the pipeline Project would occur; however, PennEast would likely reroute 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. PennEast would store and handle hazardous liquids according to its Spill Prevention Control and Countermeasure (SPCC) Plans and E&SCP to minimize potential spills. In addition, PennEast would implement the procedures in its SPCC Plan in the event of an inadvertent release of hazardous materials to prevent groundwater contamination. In the event of damages resulting from construction, PennEast will mitigate the damage 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.

Floodplains

The Project ROW in the Proposed Action area crosses FEMA designated flood hazard areas. By utilizing a dry crossing technique to cross the Francis E. Walter Reservoir, stream flow can be temporarily diverted, effectively isolating the workspace from the stream, which greatly reduces sedimentation within watercourse. Using this method, the pipeline crossing can be constructed in a matter of hours or days as opposed to trenchless techniques that can take several weeks or months; thereby reducing the duration of earth disturbance associated with the Project. This method also eliminates the possibility of inadvertent returns of drilling fluids that can occur with trenchless techniques. In addition, the pipeline will be buried underground, and preconstruction contours and elevations will be restored following pipeline installation. No aboveground facilities will be located within the floodway.

As a result, no changes to FEMA designated flood hazard areas 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, PennEast would likely reroute the pipeline ROW around USACE property potentially resulting in greater impacts to floodplain resources.

Wetlands and Waterbodies

One waterbody was identified within the 400-foot study corridor of the Proposed Action area along the Francis E. Walter Dam and Reservoir Crossing. This resource is described in Table 3 and maps providing the detailed resource location within the Project workspace are shown in Appendix B.

Dry crossing techniques would be used to cross under the Lehigh River on USACE property at Francis E. Walter, avoiding impacts to this resource. PennEast will comply with environmental permits associated with USACE property and comply with construction timing restrictions identified by the regulatory agencies. No wetlands are located within the Proposed Action area; therefore, there would be no temporary or permanent wetland impacts. The No Action Alternative would not result in waterbody or wetland impacts on USACE property as no construction/operation of the Proposed Action would occur. However, PennEast would likely reroute the pipeline 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 Project will utilize a dry crossing technique at the Francis E. Walter Reservoir. This technique involves use of a temporary dam and flow bypass method, which allows for trenching, pipe

installation, and initial restoration to occur in a dry streambed while maintaining a continuous downstream flow around the dry work area. A dry stream crossing also significantly reduces the amount of sediment and turbidity that would be created compared to a wet open cut crossing (without dams and flow diversions). This technique allows for faster installation than trenchless methods and eliminates the potential for inadvertent returns of drilling fluids that can occur with trenchless techniques. In addition, the pipeline will be buried underground, and preconstruction contours and elevations will be restored following pipeline installation.

PennEast plans to complete the crossing of the Lehigh River between mid-October and February, when the reservoir levels are drawn down and water levels are typically the lowest. During this time, the stream will be narrower and shallower which will allow PennEast to construct the crossing within 48 hours, which will minimize the possibility of downstream sedimentation and impacts to wild trout migration. Additionally, recreational impacts to fishing and boating will be reduced by constructing during low-flow conditions in late fall or during the winter.

Erosion & Sediment Control

Potential surface disturbances associated with Proposed Action include vegetation clearing, trench excavation, workspace for the dry crossing technique, 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 Francis E. Walter Reservoir. 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 State and Federal regulations.

3.4 Vegetation

3.4.1 Affected Environment

The Project ROW within USACE owned/administered Francis E. Walter Dam and Reservoir is primarily surrounded by forest vegetation including both deciduous and evergreen trees. The northern side of the crossing has sparse vegetation as the forest opens to open land near the river. Approximately 2.6 acres of land and water would be impacted by Project construction and operation at the Francis E. Walter Reservoir crossing. Of this total, construction of the Project would impact 1.1 acres of forest or woodland, of which 0.7 acre would be allowed to naturally regenerate, and 0.4 acre that would be converted to open land within the permanent ROW. Approximately 0.5 acres of open land would be temporarily impacted as a result of construction, including approximately 0.2 acre which would be maintained as the permanent easement. Approximately 1 acre of open water would be temporarily impacted during construction, 0.5 acre of which would lie within the 50-foot permanent ROW.

3.4.2 Environmental Impacts and Proposed Mitigation Measures

As noted above, the proposed PennEast Project would be located near the Buckeye Partners, LP (Buckeye's) existing ROW on USACE property at the Francis E. Walter Reservoir. Locating the Project in close proximity to the existing ROW will minimize tree clearing to the west of the Lehigh River crossing and minimize overall habitat fragmentation. Further, the use of a dry crossing method, such as the preferred dam and pump method, will allow for a relatively quick pipe installation at the river crossing. Immediately following the pipe installation, the trench will be backfilled and streambed restoration will begin. Seeding of disturbed stream approaches would be completed in accordance with the Project's approved E&SCP and the FERC Plan and Procedures after final grading, weather and soil conditions permitting. Where necessary, slope breakers would be installed adjacent to stream banks to minimize the potential for erosion. Sediment barriers, such as compost filter socks, silt fence, and/or

straw bales would be maintained across the ROW until permanent vegetation is established. Other than the 50-foot wide permanent ROW that will be maintained (mowed), there will be no permanent impacts or land use changes at the Francis E. Walter Reservoir crossing.

Therefore, it is anticipated that Proposed Action's impacts to vegetation on USACE owned/administered properties will be minimized and mitigated. 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 the Francis E. Walter Dam and Reservoir crossing provides habitat consisting of forested and scrub-shrub uplands, rivers edge and rivers. 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 likely 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 and the river's edge.

As noted above, the Lehigh River supports cold water fishes and migratory fishes, including wild trout. Cold water fisheries provide maintenance or propagation, or both, to fish species including the family Salmonidae and additional flora and fauna, which are indigenous to a cold water habitat. Migratory fisheries support the passage, maintenance, and propagation of anadromous and catadromous fishes and other fishes, which ascend to flowing waters to complete their life cycle. This section of the Lehigh River supports naturally reproducing populations to trout, but is not stocked with hatchery trout by the PFBC.

Common fish species in the Lehigh River include brown trout (*Oncorhynchus, sp.*), striped bass (*Morone saxatilis*), largemouth and smallmouth bass (*Micropterus sp.*), walleye (*Sander vitreus*), muskellunge (*Esox masquinongy*), and perch (*Perca sp.*).

3.5.1 Affected Environment

PNDI review and consultation with the USFWS, DCNR, PFBC and the PGC was initiated on August 12, 2014. Table 4 summarizes species of concern that may be within the vicinity of the Francis E. Walter Dam and Reservoir crossing or which have ideal habitat near the proposed pipeline corridor. Table 4 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 also provided in Table 4. No plant species were identified that are listed as endangered or threatened or of special concern within the Francis E. Walter crossing.

Species-specific and habitat related surveys for threatened and endangered species have been completed for the Francis E. Walter Reservoir area. These surveys were completed by qualified biologists in accordance with applicable state or Federal survey guidelines in 2015. The results of these surveys are summarized herein.

Table 4: 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	Mile Post/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	Luzerne and Carbon Counties, PA	Yes	No	Mist net surveys and radio-telemetry conducted in coordination with USFWS and PGC. No Indiana bats detected in Project area at proposed Lehigh River crossing. USFWS-PA indicated a survey would likely be required for clearing all trees >5-inches DBH. Tree clearing activities limited to the winter between 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	Luzerne and Carbon Counties, PA	Yes	No	Mist net surveys and telemetry conducted in coordination with USFWS and PGC. No northern long-eared bats detected in Project area at proposed Lehigh River crossing. PGC requiring all trees >5-inches DBH are harvested between November 1 and March 31 to prevent impacts to northern long-eared bats. USFWS-PA mandated 0.25-mile activity restriction buffer near known hibernacula.
	Eastern small-footed Bat	Myotis leibii	Not Listed	Threatened	Pipeline	Luzerne and Carbon Counties, PA	Yes	No	Eastern small-footed bat survey (day roosts) by qualified biologist was conducted in PGC-specified areas. No habitat identified, but study area changed by July re-route. Additional surveys identified habitat. Mist net surveys and telemetry conducted in coordination with PGC. Telemetry showed Eastern small-footed bat forage area within the Lehigh River crossing location. Roost sites provided with confidential information to PGC.
Reptile	Timber rattlesnake	Crotalus horridus	Not Listed	Candidate	Pipeline	Luzerne and Carbon Counties, PA	Yes	No	PFBC listed as species of concern and requiring habitat surveys at specific MPs. Surveys conducted by qualified rattlesnake biologist found denning habitat crossed by the Project centerline and gestation habitat 60-feet away from the Project centerline at the proposed Lehigh River crossing. Phase 2 spring surveys were completed in 2016 and no timber rattlesnakes or dens were identified in this area
Birds ^e	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 (AMs) that would be followed includes AM 3, AM 4, and AM 5 plus AM for blasting (see below for details of AMs). One known bald eagle nest is located more than 1,000-feet from MP 23.1 to the east.

Sources: Markuson, 2014; NOAA, 2015; PFBC, 2015a-f; PGC, 2013a-b; PGC, 2014; PGC, 2015a-c; PNHP, n.d. & 2014; Shellenberger, 2015; USFWS, n.d.

¹ Status listed though occurrence may not have been identified within Project area - see column titled "Mile Post/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 Birds within Project area that are either Federally or State-listed AND which are identified in Agency Correspondence are included in this table. PA migratory birds potentially occurring in Project area and birds solely identified by IPAC system are also listed.

Rare, Threatened, and Endangered (RTE) 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 the USACE-administered Francis E. Walter Dam property 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 nest site within the vicinity of the Francis E. Walter Reservoir crossing, which upon further evaluation was well-outside the project corridor (located more than 1,000-feet east of the ROW at MP 23.1).

Important Bird Areas

No designated Important Bird Areas (IBAs) are located within the Proposed Action area on USACE property at Francis E. Walter Reservoir.

Mammals

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. In addition, the PGC requested that roosting habitat surveys be conducted for the eastern small-footed bat (*Myotis leibii*), a Pennsylvania-listed threatened species.

Surveys, including mist netting and radio-tracking of captured female and bat species of concern, were conducted by Recognized, Qualified Indiana Bat Surveyors (QIBS) in accordance with the USFWS Indiana bat summer survey guidance (USFWS, 2015) and PGC bat survey protocols. A mist nest survey was performed within the vicinity of Francis E. Walter Reservoir during the summer of 2015 under the supervision of USFWS approved QIBS who were present at each site to positively identify capture bats. No Federally-endangered 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 Francis E. Walter Reservoir during the summer of 2015 under the supervision of USFWS approved QIBS who were present at each site to positively identify captured bats. No Federally-threatened northern long-eared bats were captured.

The PGC requested that roosting habitat surveys for this species by a qualified bat biologist be conducted within certain portions of the Project (PGC 2014, PGC 2015a, PGC 2015b, PGC 2015c). Qualified biologists conducted these surveys in May and August of 2015 (Wildlife Specialists, 2015d). At the conclusion of these studies, 3 eastern small-footed bats were fitted with transmitters and radio tracked as required by USFWS and PGC protocol. Radio telemetry identified foraging activity for an eastern small-footed over the Francis E. Walter Reservoir crossing. The telemetry data also revealed the location of a

roost tree used by the eastern small-footed bat that is located to the in close proximity to the Francis E. Walter Dam, which is 2.8 river miles away from the crossing (Wildlife Specialists, 2015d).

Reptiles

Timber rattlesnake (*Crotalus horridus*) is listed as a candidate species in PA. The PFBC requested that habitat and/or presence-absence surveys by a qualified herpetologist be conducted within certain portions of the Project (Smiles, 2014 & 2015a-b). Qualified biologists conducted these surveys in the summer of 2015 and 2016 (Wildlife Specialists, 2015c). Surveys to identify potential denning (i.e., winter hibernaculum) and gestating (i.e., spring/summer breeding habitat) habitat within the designated Proposed Action area were completed in May 2015 by a PFBC Recognized, Qualified Timber Rattlesnake surveyor. Within the Action Area, gestation habitat for timber rattlesnakes was observed within the proposed construction workspace. Potential denning habitat was observed approximately 500 feet north of the Action Area. Phase 2 spring surveys were completed in 2016 and no timber rattlesnakes or dens were identified in this area.

Plants

No plant species that are listed as endangered or threatened or of special concern were identified by State or Federal agencies where the proposed ROW crosses the Francis E. Walter Reservoir.

3.5.2 Environmental Impacts and Proposed Mitigation Measures

The Project has the potential to effect and disturb wildlife species in the vicinity of the Francis E. Walter Reservoir. Clearing the ROW for pipeline construction, operations and maintenance will permanently reduce forested habitat in the region. Locating the Project adjacent to the Buckeye ROW will condense impacts to wildlife and associated habitat within this previously disturbed area and minimize habitat fragmentation in the surrounding forest. Although the Project would result in the clearing of forested lands, the Project would maintain a forest edge, similar to existing conditions, and allow for reforestation within temporary workspaces to restore potentially affected habitat within USACE property. Wildlife within the vicinity of the Proposed Action area would be temporarily displaced during construction of the Project as a result of increased noise levels and vehicular traffic. The dam and pump construction method at the Francis E. Walter Reservoir will allow for relatively fast installation of the pipeline to minimize impacts to wildlife. In addition, constructing the crossing quickly will allow for restoration measures to be implemented more readily.

With the implementation of the avoidance, minimization and restoration measures discussed below, minimal 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 disturbance would occur to the surrounding areas. 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 (RTE) Species

Birds

In consultations, the USFWS noted the location of one bald eagle nest site within the vicinity of the Francis E. Walter Reservoir crossing; however, this nest was located more than 1,000-feet east of the ROW at MP 23.1. 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 (AM):

- 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 Federal Department of Transportation 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 1,000 feet 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 PA 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, 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 Project ROW has been sited near the existing Buckeye ROW at the Francis E. Walter Reservoir crossing to reduce habitat fragmentation. Permanent habitat alterations would be avoided in areas where birds are highly concentrated. 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

Francis E. Walter Dam and Reservoir are not designated as IBAs therefore, no impact or mitigation measures are proposed for IBAs within the Proposed Action area.

Mammals

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 or northern-long eared bats were captured in the Project area. However, as noted above, radio telemetry identified foraging activity for an eastern small-footed over the Francis E. Walter Reservoir crossing. The telemetry data also revealed the location of a roost tree used by the eastern small-footed bat that is located to the in close proximity to the Francis E. Walter Dam, which is 2.8 river miles away from the crossing (Wildlife Specialists, 2015d). 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 at Francis E. Walter Reservoir.

Reptiles

Potential denning and gestating habitats near the Francis E. Walter Reservoir were surveyed for timber rattlesnake presence, and no rattlesnakes or dens were observed during Phase 2 surveys. Therefore, no impact or mitigation measures are proposed within the Proposed Action Area.

Plants

No plant species were identified by State or Federal officials that are listed as endangered or threatened or of special concern within the Francis E. Walter dam project area; therefore, no impact or mitigation measures are proposed within the Proposed Action area.

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

Archeological Resources

USACE Federally-owned property at Francis E. Walter Reservoir was surveyed for archaeological resources in the 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).

Two cultural sites were found: PALu72-Site 1 and PALu72-Site 2. Of the two sites, PALu72-Site 1 is recommended as potentially eligible for listing in the NRHP. The Proposed Action area was sited to avoid impacts to this site. PaLu72-Site 2 is recommended as non-eligible for listing in the NRHP and therefore no further investigation was required.

Historic Resources

Although survey access has been granted to the USACE-Federally owned property at the Francis E. Walter Dam crossing; 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 Francis E. Walter Dam was developed as part of the USACE flood control project, and recreation became a congressionally authorized purpose in 1988 (USACE 2017). 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

Archeological Resources

Two cultural sites were found during archaeological field surveys, one of which was recommended as non-eligible for listing in the NRHP and, therefore, no further investigation was required. The crossing at the Francis E. Walter Dam location was sited to avoid impacts to the archaeological site that was recommended as potential eligible for listing in the NRHP. The archaeological site will be fenced during construction for further protection. As a result of these avoidance measures, 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 will 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 Francis E. Walter Dam 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 Francis E. Walter Reservoir and Dam. The proposed pipeline will cross 444 feet of the Francis E. Walter Reservoir approximately 2.8 river miles upstream of the USACE's Francis E. Walter Dam. Land use at this location is generally forest/woodland, open land, and open water.

3.7.2 Environmental Impacts and Proposed Mitigation Measures

Approximately 2.6 acres of land and water would be impacted by Project construction and operation at the Francis E. Walter Reservoir crossing. Of this total, construction of the Project would impact 1.1 acres or forest or woodland, of which 0.7 acre would be allowed to naturally regenerate, and 0.4 acre that would be converted to open land within the permanent ROW. Approximately 0.5 acre of open land would be temporarily impacted as a result of construction, including approximately 0.2 acre which would be maintained as the permanent easement. Approximately 1 acre of open water would be temporarily impacted during construction, 0.5 acre of which would lie within the 50-foot permanent ROW.

A Site Restoration Plan will be implemented 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, PennEast would adhere to USACE vegetation management requests for the Francis E. Walter Dam and Reservoir crossing.

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 USACE-owned and administered Francis E. Walter Reservoir between MPs 23.0 and 23.1. The primary purpose of the Francis E. Walter Dam is flood control, and recreation is a secondary mission; whitewater and fishery releases are planned every year (USACE 2017). Recreation along the Proposed Action area is typical of that which is available along any major waterway including fishing and boating. There are no roads leading to the crossing area; the river at this location is not used by beach goers and there are no boat launches in the immediate vicinity of the proposed ROW crossing. The location of the Proposed Action was chosen such that it is situated approximately 2 miles from the dam itself, and away from recreational access points and facilities, such as boat launches.

3.8.2 Environmental Impacts and Proposed Mitigation Measures

The crossing would be constructed between late-October and February when water levels are typically the lowest. The stream will be narrower and shallower during this time, which will allow the crossing to be constructed more quickly. Additionally, recreational impacts will be minimized by constructing during low-flow conditions in late fall or during the winter when fishing and boating activities are less prevalent. The crossing location will not affect the existing recreational access points and opportunities that are available close to the Francis E. Walter Dam.

The No Action Alternative would 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 Francis E. Walter Dam and Reservoir. A mixture of scenery provides various panoramic views of forest and waters that have been sustained for various recreational uses. Visibility of the Project ROW would depend upon the topography and one's location within USACE property. Due to the lack of access to the Proposed Action area, it is anticipated that the majority of the public that would be affected by the aesthetics of the Proposed Action would be boating along the Lehigh River after construction is complete.

In general, the Project requires a 50-foot wide easement (permanent ROW) and an approximately 50-foot-wide temporary construction workspace for a nominal 100-foot-wide construction corridor. ATWS is required in some areas to support special construction techniques. Construction crews, equipment and stock piling of soil will be visible along the proposed ROW within USACE-owned land during construction of the Proposed Action. Following completion of construction, a pipeline corridor measuring approximately 100-feet wide will be visible on either side of the Francis E. Walter Reservoir. Vegetation will reestablish within temporary work space so that, eventually, only the 50-foot-wide permanent

easement will be visible.

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. Because the Proposed Action will be installed near the existing Buckeye ROW, aesthetics in the Proposed Action area will be similar to the existing situation 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 the Francis E. Walter Reservoir is located within Luzerne and Carbon counties, which are 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 entire 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), PM₁₀ and PM_{2.5}, sulfur dioxide (SO₂) 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 Francis E. Walter Reservoir crossing in Carbon and Luzerne counties, Pennsylvania. Carbon County is marginal non-attainment for the 2008 Ozone standard, while Luzerne County is classified as attainment/unclassifiable for all pollutants. The estimated construction emissions from the Project elements in Carbon County are 28.4 tons NO_x and 3.4 tons VOC. Within Luzerne County, the estimated construction emissions for the Project are 27.4 tons NO_x 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. Each of 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 near the Francis E. Walter dam 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. 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 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 CO₂.

3.11 Noise

3.11.1 Affected Environment

The Proposed Action area is located primarily adjacent to Buckeye’s existing pipeline ROW and is surrounded by forested lands within USACE property at the Francis E. Walter Reservoir crossing. The area generally provides various outdoor recreational opportunities for the public. Due to the surrounding forest cover, noise levels in the area are generally low with dense forest vegetation providing sufficient noise buffers in the Project area. Nonetheless, sensitive noise receptors may be found within these recreational areas at any given time of the day; thus, the Project would be required to ensure that existing noise levels are preserved to the extent feasible to ensure that the recreational users are not adversely affected. Noise levels will also vary depending on the distance from the noise source, ambient noise levels, weather, topography, and vegetation in the surrounding area.

There are no specific noise sensitive receptors identified within 1 mile of this crossing, and no roads lead to specific camping/hiking recreational areas within this distance. The boat launch area near the Dam is located approximately 2 miles west from the crossing area, the Jack Frost Big Bolder Ski Area is approximately 2 miles southeast from the crossing area, and Camp Acahela (camping, scouting, hiking, fishing) is located approximately 2 miles east of the crossing location.

3.11.2 Environmental Impacts and Proposed Mitigation Measures

Noise impacts from construction of the Project would be minor to moderate, and temporary (i.e., limited to the construction phase). These temporary noise impacts would result primarily from the use of heavy construction equipment/machinery and construction traffic passing through the area—and could occur up to 7 days a week for 24 hours per day. Because the Francis E. Walter Reservoir will be crossed using the dam and pump open crossing method, the duration of construction activities at this crossing will be minimized and the majority of the construction will occur in less than one week. This standard method for construction has the additional benefit of being less noisy than other crossing methods, such as HDD.

As construction for the Proposed Action would occur within localized densely forested areas, it is anticipated that sufficient noise buffers would be in place to reduce construction sound levels. No noise sensitive receptors were identified within a mile of the crossing location. In addition, the USACE has recommended that the Project cross the Francis E. Walter Reservoir when water levels are drawn to avoid the busy summer recreational season. As such, construction noise impacts are considered to be minimal, temporary and localized.

The No Action Alternative would not result in noise impacts on USACE properties as no construction/operation associated with the Project would occur. Nonetheless, the Project would likely be rerouted outside of USACE properties and similar sound levels/noise would be generated outside of USACE properties; 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 properties. As such, no adverse noise effects are anticipated to USACE properties during Project operation.

3.12 Transportation

3.12.1 Affected Environment

The Proposed Action is located more two miles from the nearest paved roadways. To the west of the crossing location, State Route 2041/Walter Dam Road runs north and south, paralleling the crossing. To the east, State Route 115/Buck Boulevard also runs generally north and south and parallels the crossing. To gain access to this crossing location from the north and the south, PennEast will utilize the existing Buckeye ROW and existing access roads on private property north and south of the reservoir. Due to the isolated location of the Francis E. Walter Reservoir crossing, it is not anticipated that the Proposed Action would impede use of nearby roads or access to USACE Francis E. Walter property during construction.

3.12.2 Environmental Impacts and Proposed Mitigation Measures

No local roadway crossings would be drilled or bored within the Proposed Action area. Prior to construction, PennEast will coordinate with USACE regarding any necessary improvements that may be required for Project construction, including along the Francis E. Walter Reservoir, to ensure public access is not restricted to recreational areas in the vicinity of the Proposed Action. PennEast will also coordinate with USACE regarding any appropriate notices, signage, and safety measures to protect boaters using the Francis E. Walter Reservoir during construction.

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 1 areas on USACE property at the Francis E. Walter Reservoir crossing. 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, PennEast 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 the Francis E. Walter Dam Crossing location. The area generally supports outdoor recreational areas, however no specific facilities are nearby.

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. 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:

- 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 to 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 not 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.

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 could 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 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, was 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 Francis E. Walter Reservoir 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 Francis E. Walter Reservoir, including staff housing or residential areas. Overnight lodging on watercraft, in self-contained campers, or in any other form is strictly prohibited at Francis E. Walter Reservoir and on USACE property at Francis E. Walter Dam.

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 the Francis E. Walter Dam crossing location. As a result, there will be no impact to housing on USACE property at Francis E. Walter Reservoir and Dam.

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 and Luzerne Counties. Carbon County suffers from 2013 unemployment rates above the state average; and will therefore benefit from both the temporary and permanent jobs generated by the Project's construction phase. Although Luzerne County's unemployment rate was less than the state average in 2013, this county will likewise enjoy some economic benefits due to the construction of the Project.

Recreational users are drawn to the Francis E. Walter Dam area and surrounding forest; however the Proposed Action area is distant from public access points. In addition, the relatively short construction duration will minimize impacts to tourists. Therefore, the Project is expected to have a negligible impact (during construction and operation) on the local and regional tourist economy.

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, the construction and operation of which 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 Francis E. Walter Reservoir that have been identified to date and may be considered in the context of the cumulative impacts analysis is provided in Table 5.

Cumulative effects result from spatial (geographic) and temporal (time) crowding of environmental disturbances. Considering baseline conditions, potential cumulative impacts of the proposed Project were evaluated 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. The 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 Francis E. Walter Reservoir crossing.

Table 5: Projects Potentially Contributing to Cumulative Impacts Analysis ¹

Project ^a	Location (Address, Township, County, State)	Description	Permit Number	Closest MP	Approx. Distance to Project (Miles, Direction)	Approx. Permanent Impact Area (acres)	Current Status and Schedule	Watershed ²	Air Quality Control Region (AQCR) ³
Marcellus Shale Development									
Wells ⁴									
None									
Pipeline Gathering Systems ^{5,6}									
None									
Interstate Natural Gas Pipeline Projects ⁵									
Franklin Loop (Leidy Southeast Expansion) Operated by Transco	Tobyhanna and Buck Townships, Luzerne County, PA	Williams Company's Franklin Loop is a 11.5 mile, 42-inch diameter pipeline expansion project that connects to Transco Pipeline.	FERC Docket No. CP13-551-000	23.1	3 miles, East	69.7	Placed into service December 30, 2015. Final restoration activities completed September 26, 2016.	Upper Lehigh	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region
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.	Not Available	23.1	2.4 miles, East	Not Available	Not Available	Upper Lehigh	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region
Other Projects									
Electric Generation And Transmission									
None									
Transportation									
None									
Commercial/Residential Development									
None									

Sources: Clean Air Council 2017; Delaware River Keepers 2017; FERC 2014 (a); FERC 2017; National Pipeline Mapping System 2017; PADEP 2015 (a); PADEP 2017; PennDOT 2017 (a); PennDOT 2017(b); Williams 2013; Williams 2017

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 NHD 10 HUC-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 Permit-2 in PA between 01/01/2012 and 03/17/2017.

4.1 Geology/Soils

Cumulative adverse impacts on geological or soil resources are not anticipated. Temporary disturbances to geological resources would include disturbances to steep topographic features found along the construction ROW and blasting activities. These and other impacts to geologic resources would be mitigated through the use of BMPs during construction to allow for safe practices and prevent erosion. In addition, unforeseen impacts should be minimized by the use of proper construction techniques, including proper monitoring by qualified and trained EIs. 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.

Similarly, any impacts to soils from the Project would generally be localized and temporary. Impacts to soils would be minimized through consistent implementation of the E&SCP and adherence to the FERC Plan and Procedures 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 O&M 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 minimization of impacts to water resources. However, temporary impacts to water resources during construction activities would occur, including unavoidable trench excavation across the Lehigh River and minimal fluctuations in local water tables that would occur during trench dewatering. Construction could temporarily impact approximately 1.0 acre of open water associated with the Lehigh River. However, PennEast plans to construct the crossing when water levels are low, which would significantly reduce the acreage of temporary impacts. Approximately 0.5 acres of open water (measured at the Ordinary High Water Mark during flooded conditions) would be located within the permanent ROW. These impacts would be minimized through the implementation of erosion and sedimentation control BMPs as outlined in the E&SCP and adherence to the FERC Plan and Procedures. The E&SCP would be followed during construction, and O&M activities at the proposed Lehigh River crossings. The procedures outlined in the E&SCP would minimize introduction of water pollutants into the waterbody and minimize impacts to aquatic resources.

Potential impacts from construction-related sedimentation and turbidity would be limited to short-term, temporary disturbances by following the adopted waterbody crossing procedures. No long-term impacts are anticipated after restoration of the stream bottom and regrowth of stream bank and aquatic vegetation. Once construction is complete, the streambed and banks would be restored to pre-construction conditions to the fullest extent possible, thus minimizing long-term impacts. Operation and routine maintenance of the pipeline would not affect fishery resources within the Project area. No permanent ecological losses to water resources are associated with the Project.

The realistic, reasonable extent of future impacts resulting from this Project would predominantly focus on facility operation and maintenance activities. Such activities would be conducted in a manner similar to the construction period (i.e., avoiding and minimizing disturbances and implementing timing restrictions) and would thereby limit any future temporary water resource impacts.

4.3 Vegetation

It is anticipated that the Project would result in a minor adverse effect on vegetation within USACE owned/administered property at Francis E. Walter Reservoir. The Proposed Action would result in the clearing of 1.1 acres of forested areas during construction; however, the temporary workspace areas (approximately 0.7 acre) would be allowed to revegetate. The 50-foot wide ROW would be managed as open land. None of the land on USACE property associated with the Francis E. Walter Reservoir crossing would be converted to a developed or non-vegetated land use.

4.4 Biological Resources

Based on the reasonably foreseeable future actions identified in Table 5, cumulative effects to biological resources would be minimal. Specifically, the projects identified in Table 5 consist of linear pipeline projects where impacts to biological resources would be greatest during construction and minimal during operations and maintenance activities. Tree clearing and conversion of land would occur as a result of the construction of these projects. Similarly, the Proposed Action will require temporary and permanent clearing of forested areas and conversion of habitat until temporarily disturbed areas are restored. However, all activities associated with the Project and Table 5 projects would be conducted in such a manner as to avoid and minimize impacts to sensitive species (i.e., timing restrictions) and would be required to comply with all state and federal permit requirements. As such, the potential cumulative effects of the Project and activities identified in Table 5 to rare, threatened, or endangered species including, but not limited to, aquatic species, bats, migratory birds and bald eagles within Francis E. Walter Reservoir would be minimal and cumulative effects to biological resources would be minimal.

4.5 Cultural/Historic Resources

Cumulative adverse impacts to archaeological or historic architectural resources are not anticipated as a result of the Proposed Action in conjunction with projects identified in Table 5. Two cultural sites were identified at the Francis E. Walter Reservoir and the adjacent USACE-Federally owned property. Of the two sites, one is recommended as potentially eligible for listing in the NRHP. The Proposed Action area was sited to avoid impacts to this site, but for further protection, PennEast proposes to fence in the site during construction. Similar to the Proposed Action, the activities listed in Table 5 would be subject to USACE Section 106 review and compliance, including PHMC concurrence and Native American (tribal) consultation to avoid/minimize potential impacts to cultural/historic resources. Therefore, it is anticipated that the Project in addition to the projects listed in Table 5 would have relatively minimal cumulative effects to cultural resources within/near Francis E. Walter Reservoir.

4.6 Land Use

The projects identified in Table 5 consist of linear pipeline projects where impacts to land use would be greatest during construction of the ROW. Tree clearing and conversion of land would occur as a result of the construction of these projects. Similarly, the Proposed Action will require temporary and permanent conversion of forested areas to open land. Temporarily disturbed areas will be allowed to naturally revegetate to their preconstruction condition. To minimize effects to land use, the Proposed Action will be located adjacent to Buckeye's existing ROW on USACE property. Co-locating the pipeline will minimize changes to land use from forested to open land within this region. As a result, the potential cumulative land use effects at Francis E. Walter Reservoir would be minimal.

4.7 Recreational Uses

Recreational users of the Francis E. Walter Dam area enjoy activities on and along the river and the surrounding forest; however the Proposed Action and projects identified in Table 5 are far from public

access points. Construction of the Proposed Action will not overlap with any of the projects identified in Table 5. In addition, construction of the Proposed Action at the Francis E. Walter Reservoir is expected to be short in duration. Therefore, the Project is expected to have a negligible impact on recreational users within Francis E. Walter Reservoir and adjacent USACE-owned property.

4.8 Aesthetics

Visual impacts associated with the Project have been evaluated, minimized, and avoided as possible. Visual resource impacts would be minimized by co-locating the Project ROW with Buckeye's existing pipeline ROW. Dense forest surrounding the Proposed Action area will also minimize visual impacts of the Proposed Action. The Project is not anticipated to have any significant permanent visual impacts on any Federal or State listed visually sensitive areas, such as scenic rivers, or natural landmarks as these features are not present in the Proposed Action area. Construction of the Proposed Action and 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.

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 (CO₂e) 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 CO₂.

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

The potential for significant noise to be generated during construction of the proposed Francis E. Walter Reservoir crossing is greatly decreased through the utilization of the dam and pump, open cut crossing method. Noise impacts from construction of the Project would be minor to moderate, and temporary (i.e., limited to the construction phase). At this location, the crossing of the Lehigh River is expected to occur in less than one week. As construction for the Proposed Action would occur within remote and densely forested areas, it is anticipated that sufficient noise buffers would be in place to reduce construction sound levels. Construction of the Proposed Action will not overlap with any of the projects identified in Table 5; therefore, it is not anticipated that the Proposed Action would have a cumulative effect on noise.

4.11 Transportation

It is not anticipated that construction of the Proposed Action would overlap with construction of the projects identified in Table 5. However, 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. To mitigate these effects, PennEast would utilize major paved roadways, existing access roads, and the construction ROW to reduce impacts on local roadways. In addition, PennEast will develop a Traffic Management Plan for the Project. The plan will identify all roads that will 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. As a result, 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 Department of Transportation 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 Project.

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 the Francis E. Walter Reservoir crossing 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 5 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 5 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 the Francis E. Walter Reservoir crossing, only additional environmental considerations related to those areas are discussed herein.

5.1 Indirect Effects

Indirect Effects as a result of the Proposed Action 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 the Lehigh River adjacent to an existing ROW, minimal 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

Unavoidable Adverse Effects as a result of the Proposed Action would be minimal. Some loss of forested habitat would occur along the forest edge as a result of tree clearing required for the Project. However, as noted above, the forested areas would be restored in the temporary workspaces and replaced with open land habitat in the maintained ROW. In addition, the Project has been co-located adjacent to the existing Buckeye ROW to minimize permanent impacts to forested habitats.

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. As the Project requires tree clearing in some areas, the Project would have the potential to result in the irretrievable commitment of resources such as vegetation/timber within the Project's 50-foot wide ROW areas; however, vegetation within temporary workspace would be allowed to naturally revegetate. In the event of decommissioning of the pipeline, this land would be allowed to revert back to existing conditions and would not result in an irreversible, irretrievable commitment of resources. 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 Project.

6.0 COMPLIANCE WITH FEDERAL STATUTES

As the lead Federal agency for the Project on USACE-administered land at the Francis E. Walter Reservoir, the Proposed Action was evaluated in accordance with all applicable Federal regulations and the Proposed Action’s compliance status. Table 6 provides a summary of the Proposed Action’s compliance with pertinent Federal regulations for the USACE administered land at the Francis E. Walter Reservoir crossed by the Project.

Table 6: 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

Federal Statutes	Level of Compliance
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
<p>Levels of Compliance:</p> <ul style="list-style-type: none"> 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 the Francis E. Walter Reservoir and Dam. 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 947-foot pipeline through USACE-administered property, which is expected to be installed via the dam and pump 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. In addition to the measures that would mitigate adverse impacts during construction, PennEast proposes to purchase 200 Dunstan Chestnut (*Castanea dentata x mollissima*) seedlings which will be used to supplement wildlife enhancement plantings in managed timber blocks at the USACE project area. PennEast also proposes to use the Ernst Native Habitat for Strip Mines Mix, ERNMX-111, which is likely to be best suited to the harsh site conditions while providing quick erosion control, wildlife cover, and pollinator habitat. These proposed mitigation measures would minimize impacts and are anticipated to result in net beneficial impacts on USACE properties exceeding pre-project conditions. PennEast will continue to coordinate with the USACE to incorporate the mitigation measures in the real estate agreement. 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.

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