**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION III**
**1650 Arch Street**
**Philadelphia, Pennsylvania 19103-2029**

SEP 1 2 2016

Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: PennEast Pipeline Project Draft Environmental Impact Statement; Pennsylvania, and New Jersey; July 2016 (FERC Docket No. CP15-558; CEQ# 20160175)

Dear Deputy Secretary Davis:

In accordance with the National Environmental Policy Act (NEPA) of 1969, Section 309 of the Clean Air Act and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508), the U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for PennEast LLC's (PennEast or the applicant is a consortium of six energy companies) PennEast Pipeline Project. PennEast proposes to construct and operate about 118.8 miles of natural gas pipeline extending from Luzerne County, Pennsylvania to Mercer County, New Jersey. EPA is a cooperating agency for this DEIS. This comment letter jointly reflects the review and comment of EPA Regions 2 and 3 on the PennEast Pipeline Project DEIS.

EPA has significant concerns regarding the alternatives analysis, a number of important topics for which information is incomplete, and the direct, indirect and cumulative impacts of the proposed action on the environment and public health, including impacts to terrestrial resources, including interior forests, aquatic resources, and rare, threatened and endangered species. This letter contains a brief summary of the principal issues; a more detailed discussion of the project, impacts and issues, and our recommendations to improve the analysis, is presented in the enclosure.

**Alternatives**

The DEIS does not analyze alternatives beyond the applicant's preferred alternative in detail. EPA recommends that FERC provide detailed analysis on system and route alternatives, means to meet demonstrated demand. We believe that FERC should further consider collocation opportunities and develop alternatives which further avoid and minimize impacts to important project area resources. Without additional analysis of alternatives, it is not clear that the preferred alternative is the only one that can meet the stated purpose and need. Additional recommendations on specific system and route alternatives are provided in the enclosures to this

letter. An expanded discussion would help the decision maker and the public understand and explore viable alternatives.

**Impacts to the environment and public health**

The current preferred alternative results in significant adverse environmental impacts. Impact estimates in the DEIS include direct removal or fragmentation of 633 acres of forest. Impacts to high valued interior forests are not quantified. The preferred alternative would result in 56 acres of temporary impact to wetlands, 35 acres of permanent impact to wetlands, and 255 waterbody crossings. These systems provide habitat and valuable water quality and air quality ecological services for the region and downstream Chesapeake and Delaware Bays. PennEast has proposed a 1,056 foot dry crossing of the Susquehanna River, which appears to be the longest crossing of the project. Construction of this crossing proposes to divert flow of the river during low flow conditions. EPA recommends that the potential on site and downstream effects of these flow perturbations be quantified.

EPA recommends the EIS evaluate potential construction impacts relative to mining subsidence, landslides and flash flooding and potential blasting impacts to water wells, springs, and wetlands. We also recommend that the DEIS consider the project's potential to induce mobilization of naturally-occurring arsenic into groundwater.

The DEIS contains estimates of GHG emissions from construction and operation of the project as well as the end use of the gas to be transported. We recommend that the DEIS also consider mitigation opportunities, especially approaches to reducing leakage of methane along the proposed pipeline; please see the following website for more information: https://www.epa.gov/natural-gas-star-program

Many surveys, data collection, and analysis are incomplete. EPA recommends that FERC fully assess project impacts to natural resources with more complete information. EPA recommends that FERC consider ecosystem services and conduct an aquatic resource functional assessment. This information could both improve FERC's understanding of the potential impacts of the project, and suggest possibilities for decreasing environmental impacts. We recommend that FERC fully provide appropriate compensatory mitigation for adverse impacts to natural resources.

**Cumulative impacts**

The cumulative impact assessment narrowly identifies past, present and reasonably foreseeable actions as well as uses a narrow geographic and temporal scope to assess impacts. EPA's detailed recommendation on the scope of the analysis provided in the enclosure to this letter emphasize the need to improve public understanding of cumulative impacts. EPA recommends that FERC describe the inter-related network of existing and proposed pipelines and associated impacts. We recommend that the cumulative impact analysis be expanded to provide a more comprehensive consideration of impacts from natural gas production, transmission and use.

**Incomplete information**

A significant amount of information is omitted from the DEIS and is proposed to be filed by the project proponent at a future date. Failing to consider this information in the DEIS leads to gaps in the data and lack of potentially important information for the decision maker. Some of the key information that is left to a future date includes geophysical investigations (particularly landslide investigations); Karst Mitigation Plans; Blasting Plans; water well and spring surveys; historic information; surveys for land, rare, threatened or endangered species; geotechnical feasibility studies for Horizontal Directional Drilling (HDD) crossing locations; mitigation measures to minimize drilling risks; and a detailed aquatic resource compensatory mitigation plan.

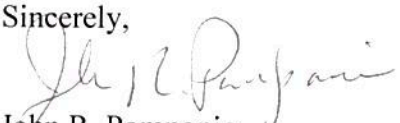
EPA is concerned with extent and significance of information left to a later date. For example, the EIS includes more than 50 recommended measures proposed to be included as specific conditions in the Commission's Order, including currently incomplete plans and surveys. Although the DEIS contains a conclusion that FERC does not believe that PennEast's responses to conditions would change any of the conclusions presented in the DEIS, EPA is concerned that a fully informed evaluation of potential impacts and routing decisions may not be possible without some of the still incomplete information. EPA recommends that FERC evaluate relevant and critical information to evaluate potential impacts and determine if additional avoidance can be accomplished through rerouting of the pipeline.

EPA is interested in discussing with FERC the most appropriate way for new information such as surveys, plans, and analysis, can be shared and evaluated with stakeholders. We recommend that the information not currently included in the DEIS be disseminated to resource agencies and public stakeholders to allow comment prior to the issuance of any certificates by FERC; this may possibly be best accomplished through the use of a revised DEIS.

For the reasons stated here and in the attached more detailed comments, EPA has rated the DEIS preferred alternative as EO-2 (Environmental Objections, Insufficient Information). A description of our rating system can be found at:
www.epa.gov/nepa/environmental-impact-statement-rating-system-criteria

We would appreciate the opportunity to discuss the comments provided in this letter and the enclosure and answer any questions you may have, at your convenience. Please contact Jeff Lapp, Associate Director at (215) 814-2717 or lapp.jeffery@epa.gov, or the staff contact for this project Ms. Alaina McCurdy at (215) 814-2741 or mccurdy.alaina@epa.gov.

Sincerely,



John R. Pomponio
Division Director
Environmental Assessment and Innovation Division

Enclosure (1) Narrative Technical Comments

Enclosure 1 – Narrative Technical Comments
PennEast DEIS

Enclosure 1 includes Narrative Technical Comments on the following topics:

1) Background/Description
2) Alternatives Screening
3) System Alternatives
4) Route and Above-ground Facility Alternatives
5) Geology
6) Streams and Wetlands
7) Vegetation, Wildlife, and Public Lands
8) Rare, Threatened and Endangered Species
9) Cultural Resources
10) Conservation and Visual
11) Air
12) Drinking Water, Human Health, and Environmental Justice
13) Cumulative Impacts
14) Climate Change

## 1) Background/Description

The applicant's project purpose is to provide about 1.1 million dekatherms per day (MMDth/d) of year-round natural gas transportation service from northern Pennsylvania to markets in New Jersey, eastern and southeastern Pennsylvania, and surrounding states. The applicant's preferred alternative includes 115.1 miles of new, 36-inch-diameter pipeline (main line); the 2.1-mile Hellertown Lateral consisting of 24-inch-diameter pipe in Northampton County, Pennsylvania; the 0.1-mile Gilbert Lateral consisting of 12-inch-diameter pipe in Hunterdon County, New Jersey; and the 1.5-mile Lambertville Lateral consisting of 36-inch-diameter pipe in Hunterdon County, New Jersey. Additional facilities include one new 47,700 horsepower compressor station in Kidder Township, Carbon County, Pennsylvania, eight metering and regulating stations for the Project interconnects, 11 mainline valve (MLV) sites, and four pig launcher/receiver sites. About 44.3 miles (26.8 miles in Pennsylvania and 17.5 miles in New Jersey), or about 37 percent, of the 115.1-mile-long Main Line pipeline route would be collocated and constructed adjacent to existing rights-of-way.

## 2) Alternatives Screening

In addition to the preferred alternative the EIS presents the no-action alternative, four system alternatives, four route alternatives, other minor route modifications and variations, and one compressor station alternative. System alternatives included the Transco Leidy Line system alternative, Columbia Gas system alternative, Texas Eastern system alternative, and the Atlantic Sunrise system alternative. Route alternatives and variations included the Luzerne and Carbon Counties Route alternative, the Leidy Route alternative, Bucks County alternative (also referred to as original route), and the Harbourton route alternative. Each of the system and route alternatives were dismissed. Only the applicant's preferred alternative, described above, was carried forward for detailed analysis.

EPA is concerned that there may be alternatives to the applicant's preferred alternative that may meet the project objectives which were not considered in detail in the DEIS. Some

alternatives considered at the screening level would have similar impact and should be retained for further detailed study. EPA is concerned that evaluation criteria of alternatives seems to be unequally applied to many of the alternatives, such as amount of collocation, length of pipeline, amount of disturbance, amount of operational right of way (ROW), and wetland impacts. The weighing of advantages and disadvantages should be clearly explained.

The preliminary screening done in the EIS does not take into account the quality and value of resources, which can be better incorporated into the study if these alternatives were retained. EPA recommends that FERC consider the varying degrees of resource function, value or quality, in addition to estimated impact totals (acreage, miles, etc). The alternatives analysis should fairly evaluate and describe alternatives that were dismissed from further study as well as the rationale for their dismissal. Alternative locations for project beginning and end points should also be described and evaluated, as there could be many potential tie in locations for the mainline and laterals; it is unclear that other locations are not feasible or beneficial.

**3) System Alternatives**

In the absence of improved purpose and need documentation, it is unclear if the stated purpose and need is too narrow and thereby limits the range of alternatives. Four system alternatives were dismissed from consideration in the DEIS, including the Transco Leidy Line system alternative, Columbia Gas system alternative, the Texas Eastern system alternative and the Atlantic Sunrise System alternative.

The PennEast DEIS states that Transco Leidy Line system alternative was considered in the Atlantic Sunrise EIS (called the Transco system alternative in that document); the PennEast EIS stated that collocation was determined to be not feasible and capacity was constrained. The Atlantic Sunrise EIS found that collocation in certain areas would be feasible and the alternative was not capacity constrained. EPA reviewed and provided comments on the Atlantic Sunrise DEIS, including various system alternatives presented. In our comments on Atlantic Sunrise, we recommended that the Transco System alternative be considered in further detail in that EIS. Similarly we recommend FERC to consider this system alternative in greater detail alongside of the proposed project in the EIS. EPA recommends that this alternative be more carefully evaluated.

An Atlantic Sunrise system alternative is presented in the DEIS, which states that this line is already fully contracted, doesn't deliver to the same points, and would have similar or greater environmental impacts as PennEast. However an expanded Atlantic Sunrise system alternative was not presented. We urge FERC to present equivalent alternative analysis' for each pipeline, and specifically as was done in the Atlantic Sunrise DEIS which presented an expanded PennEast Project requiring 80 additional miles of pipeline to the currently proposed PennEast Project and would also connect to the Transco Pipeline. We recommend that FERC consider an expanded PennEast Project or an expanded Atlantic Sunrise pipeline which could potentially eliminate the need for one of the applicant proposed projects and could potentially reduce the overall environmental impacts, duplicative services, and may have the potential to meet the purpose and need. EPA recommends FERC consider evaluating pipelines routed through the same areas and pipelines making similar connections together in further detail.

The Columbia Gas system alternative and the Texas Eastern system alternative were dismissed from consideration because the receipt and delivery points were not addressed. If

alternate receipt and delivery points were possible then the alternatives would have the potential to be viable. EPA recommends that FERC more broadly consider delivery and receipt points in order to more fully consider and evaluate alternatives that may be both reasonable and viable to the applicant preferred alternative. The EIS should describe how the start and end point locations for the proposed project were determined. This discussion could provide insight into the rationale for the selected locations of the proposed action. System alternatives that utilize different start or end points may meet the project purpose and need should also be considered. Reasonably similar delivery points and pipeline connection locations should be considered.

It may be beneficial to note that the impact estimates for system and route alternatives have likely not included efforts to avoid and minimize adverse impacts, as was done for the preferred alternative. If similar levels of study and effort to avoid and minimize impacts for these alternative, the potential to reduce adverse impacts of system alternatives could be identified. A more detailed analysis could reveal that system alternatives like the Transco Leidy Line system alternative (or Transco system alternative) result in minimized impacts, has environmental advantages or is a less damaging alternative. It appears that system alternatives have potential to meet the stated purpose and need/objectives of the applicant's preferred alternative.

**4) Route and Above-Ground Facility Alternatives**

Several route alternatives were presented in the DEIS, including the Luzerne and Carbon Counties Route alternative, the Leidy Route alternative, Bucks County alternative (also referred to as original route), and the Harbourton route alternative. Although these alternatives were dismissed, it is not clear that the stated disadvantages outweigh the potential advantages. In order to fully consider the environmental advantages and disadvantages, we recommend retaining these route alternatives.

The Bucks County route has the potential to avoid waters supply and sole source aquifers in Hunterdon County, New Jersey. The Bucks County Alternative would result in less disturbance during construction, less operational right-of-way, and would impact fewer wetlands during construction compared to the corresponding segment of proposed route. The Luzerne and Carbon Counties route would be 1.7 miles shorter and result in 27 acres less of construction disturbance. The Leidy line route has the potential to be collocated for an additional 94.8 miles and would the Sourland Mountain region in New Jersey, which is comprised of lands in preservation and is a highly valued natural resource. Additional comments regarding Sourland Mountain are provided below. If avoidance and minimization efforts were applied to these route alternatives, impacts from laterals and extensions to delivery points might be reduced. EPA would not recommend eliminating these route alternatives, particularly the Leidy line route at this time. The EIS has recognized that the Leidy Line route is viable; until further detailed analysis is conducted, this alternative should not be eliminated.

We recommend that an alternatives analysis for above-ground facilities, including all compressor stations, be conducted and included in the EIS to potentially minimize impacts to forest and Forest Interior Dwellings (FIDS) habitat, aquatic resources, Rare, Threatened and Endangered (RTE) species, air quality, and other resources. The Kidder CS proposed location would impact 1.4 acres wetland (construction and operation), 31.4 acres forest for construction, and 24.8 acres forest for operation. EPA is very concerned that the access route to the Kidder Compressor station seems to disregard forest impacts and not minimize tree loss. We request that access route alternatives be considered, which include placing the route adjacent to the existing

right-of-way or connected to the road next to the storage facility. Potential impacts resulting from these alternatives should be considered in the EIS, which can include potential noise and traffic construction related impacts, any potential long-term impact, and appropriate compensatory mitigation measures.

One alternative location for the Kidder CS was presented in addition to the proposed location. CS Alternative 1 would impact 0.2 acres wetland (construction and operation), 25 acres forest for construction, and 23 acres for operation. Despite the apparent forest and wetland advantages for CS Alternative 1 and its proximity to the proposed location, the CS Alternative 1 was not preferred because the preferred CS location is zoned light industrial and abuts I-80 and is further from the nearest noise sensitive area (NSA). It is unclear why the CS Alternative 1 location was dismissed from further consideration. We suggest that additional detail on the siting criteria along the pipeline and selection rationale be included in the EIS. It is not clear that alternate locations for compressor stations beyond those included in the proposed action have been considered or included in the EIS. EPA also recommends that the access route to compressor station sites be evaluated for possible opportunities to avoid and minimize impacts.

**5) Geology and Arsenic**

Challenging geologic conditions are likely to be encountered during project construction. Blasting, in combination with steep slopes, karst topography, and active or abandoned mines and quarries, has the potential to result in adverse impacts that were not considered or fully evaluated in the EIS. At this time, it is unclear if the data presented is complete or surveys are completed or ongoing. We recommend clarifying this information in the EIS. We also recommend evaluating the potential effects of these geologic hazards, including mining related subsidence, landslides and flash flooding, on pipeline construction and operation. We recommend that impacts, especially in high risk areas, be evaluated specific to this project. Further avoidance and minimization of impacts to affected lands might be appropriate; we recommend making such contingencies clear in the NEPA analysis.

We recommend that the EIS describe the nature, extent, frequency of potential blasting impacts water wells, springs, wetlands, resources of special concern, nearby aboveground facilities, and adjacent pipelines and utility lines. It was difficult for EPA to fully evaluate the potential effects of blasting as the EIS did not include the blasting plan that is referenced throughout the document. Changes to geology resulting from blasting may directly and indirectly affect hydrology, wildlife and local residents, which we recommend considering within the scope of the EIS.

Geotechnical investigations for proposed HDD locations are incomplete. As landowner permissions become available, we recommend including HDD geotechnical investigations data and interpretations in order to evaluate the potential for use of HDD at these locations so that other methods may be explored if HDD cannot be implemented. EPA recommends FERC develop and finalize before construction, an HDD construction monitoring and adaptive management plan in order to minimize potential impacts from HDD frack out on any rare, threatened or endangered species, as well as overall stream health and habitat. In order to concurrently evaluate potential geologic hazards, karst hazards, drinking water impacts, and blasting impacts, we recommend that geotechnical reports, the Karst Mitigation and Blasting Plans be included in the EIS.

The proposed pipeline route crosses areas exhibiting shallow depth to bedrock, which represents 31 percent of soils crossed. We recommend explaining how methods involved in trenching other than excavation, such as blasting, may impact the soil moisture capacity to further evaluate revegetation potential or prime farmland soil conditions after such a method is implemented. Alteration of shallow bedrock due to excavation and blasting may modify hydrologic pathways and storage potential of aquifers. These impacts may not be consistent over the entire length of the pipeline and may need to be evaluated on a case-by-case basis where groundwater resources are used for farming practices or drinking water-supply.

Concerns have been raised that the PennEast pipeline project may induce mobilization of naturally-occurring arsenic into groundwater and therefore contaminate nearby water resources. In addressing some public comments, PennEast conducted a leach test to determine implications for arsenic mobility related to the proposed PennEast Pipeline. However, there are concerns that were not addressed in the study and therefore the implications for arsenic mobilization related to the proposed PennEast project remain unknown.

The study conducted by PennEast addresses the spread of arsenic during construction and has concluded that broken fragments of natural-occurring arsenic enriched rock, generated during trenching activities and subsequently returned as backfill, will not result in significant arsenic mobilization into the hydrogeological environment. The study also concluded that the drilling mud, used for HDD activities, will not become contaminated with arsenic-enriched rock, mobile fractions of arsenic will not contaminate the environment, and arsenic-enriched rock-mud mixture will not require handling and disposal as a hazardous waste class. The study, however, did not address comments concerning the impact of long term operation of the proposed pipeline on the spread of arsenic produced by bacteria into groundwater. Some conclusion and statements appear to be contradictory to others made previously in the DEIS regarding the risk of arsenic mobilization. Please clarify the risks of arsenic mobilizations, and outline any plans to mitigate these risks.

EPA recommends that FERC further investigate the possibility of arsenic mobilization during construction into groundwater. The potential for surface activities to mobilize arsenic to reach deep water wells is uncertain. It may be prudent to test wells not only before and after, as stated in the DEIS, but also during construction. We recommend that FERC outline monitoring plans or include them in the EIS and make them available to the public. The potential impacts surrounding arsenic have been raised by many residents and communities in the project area, many of whom may be using water from deep wells while construction of the project is taking place. We suggest FERC consider how this information would be most effectively communicated to communities within the areas of detectible arsenic mobilization. It is critical that FERC identify how test results will be shared, and how the public will be kept informed.

It is also important that FERC address the reports and concerns raised by the public, Intervenors, and within filed reports, some of which address the proposed construction methods. EPA recommends that FERC carefully consider these issues and ensure that concerns regarding arsenic mobilization are adequately addressed.

## 6) Streams and Wetlands

The EIS reports that construction of the project would temporarily impact about 56 acres of wetlands (26 acres in Pennsylvania and 30 acres in New Jersey) and permanently impact about 35 acres of wetlands (17 acres in Pennsylvania and 18 acres in New Jersey). The Project would cross 255 waterbodies (159 perennial, 45 intermittent, 40 ephemeral, and 11 open water). EPA recommends that additional information on aquatic resources be included in the EIS and made publicly available prior to any issuance of Certificate approval by FERC, including complete field delineation information, impact breakdowns and specific construction techniques for each waterbody crossing, detailed stream and wetland assessment data on the quality or functions of the systems, and detailed, or at a minimum conceptual, compensatory mitigation plans.

At this time, the entire proposed project corridor has not been surveyed. It is stated that about 77% of preferred route has been delineated for wetlands and streams in Pennsylvania, and only 28% in New Jersey. EPA recommends that these surveys be completed and verified prior to the issuance of a FERC Certificate. We also recommend that the applicant use an appropriate functional assessment to evaluate the impacts, both temporary and secondary, to the aquatic ecosystem. Using an appropriate assessment will ensure that functions and values are accounted for in the impact assessment and that the proposed compensation plan is adequate to offset the loss, including temporary loss, of aquatic resource functions. Without completed surveys and a functional assessment of the aquatic resources, it is unclear if sufficient wetland and stream information has been collected to support informed decision-making.

Additionally, the proposed project would likely require Clean Water Act Section 404 permits from the U.S. Army Corps of Engineers (USACE) and the New Jersey Department of Environmental Protection (NJDEP), for impacts in Pennsylvania and New Jersey respectively. Without more detailed information it is uncertain if there is sufficient information for a fully informed decision to made by FERC, or other permitting agencies, as well as if the proposed impacts have been fully avoided and minimized or will be appropriately compensate for the functions lost through compensatory mitigation.

EPA is concerned about direct, secondary and cumulative impacts to aquatic resources, groundwater, and water quality. Aquatic resources have the potential to be impacted by many activities, including waterbody crossings, clearing, blasting, and water withdraws for hydrostatic testing. Some of the resources within the project have ecological and recreational importance as stated on page 4-47, including High Quality and Exceptional Value streams in Pennsylvania, and Freshwater, Trout Maintenance, and Category 1 waterbodies in New Jersey. The full assessment of these simultaneously occurring impacts to resources needs to be conducted. With the potential for complex impacts to occur, such as changes in recharge patterns and flow status, additional avoidance and minimization measures may be necessary to protect the aquatic ecosystem.

The DEIS did not detail avoidance and minimization of adverse impacts to wetlands and streams. We recommend that the DEIS clearly describe the avoidance and minimization efforts are being incorporated into the project design and construction. For analysis in the EIS, avoidance and minimization measures should not only apply to direct impacts, such as the discharge of fill material or crossings, but also indirect impacts (e.g. potential increased downstream sedimentation), as well as by the proposed water withdrawal. Water withdrawal may affect recreational and biological uses, stream flow, and result in impacts to stream and

wetland habitat. EPA recommends that FERC conduct further detailed analysis of specific streams and wetlands of concern or high sensitivity and work with appropriate resource agencies to determine if additional avoidance and minimization efforts may be necessary to reduce impacts to important resources within the project area.

PennEast proposes to prepare site-specific blasting plans for each waterbody crossing where blasting is determined to be necessary. We suggest that the EIS explain how it will be determined that blasting at waterbody crossings will be necessary. If this information is discussed in the blasting plans, then we recommend that these plans be provided as part of the EIS and made available to stakeholders to question and understand. We suggest that these blasting and specific crossing plans be prepared and made public before approval by FERC and permitting agencies, such as the USACE and NJDEP, and if appropriate, other regulatory agencies. We recommend that site specific plans identify special resource considerations during blasting to determine if a pre-blasting, and post blasting monitoring plan is appropriate. We recommend that the EIS also consider potential secondary impacts including effects to stream base flow. We recommend including a map with the waterbody locations that may require blasting, including karst topography, wetlands and water withdrawal locations. Crossing and construction methods are critical to assessing project impacts. Without this additional information it is unclear if FERC can make a fully informed decision regarding the potential impacts to waterbodies.

A detailed compensatory mitigation plan (CMP) has not been included as part of the EIS. EPA requests an opportunity to review and comment on the CMP. It is unknown if the proposed mitigation to address the conversion and temporal loss of wetlands and aquatic resources will be adequate. We recommend that measureable, observable success criteria for proposed mitigation sites be developed and included. Additionally, we recommend a monitoring plan of the converted wetlands to assure that they remain waters be developed. FERC may wish to consider whether additional mitigation to address impacts to aquatic resources beyond the CWA Section 404 context may be appropriate.

The project proposes to utilize HDD at several stream crossing locations, including Beltzville Lake, the Lehigh River/Lehigh Canal the Delaware River/Delaware Canal, Lockatong Creek (at two locations), and an unnamed tributary to Woolsey Brook. The Susquehanna River will also be crossed by the PennEast Pipeline, however HDD is not proposed at this location. According to Table 4.3.2-5, the Susquehanna River would be crossed using a dry crossing method with the crossing length of 1,056 feet, which appears to be the longest crossing of the entire project. Page 4-120 states that 10.9 acres of open water would be affected by the additional temporary workspace (ATWS) associated with a dry crossing of the Susquehanna River, and that the crossing would be constructed by diverting the flow of the river during low flow conditions.

EPA is concerned that the proposed dry crossing method may not be the most protective crossing method for the River and may result in unanticipated impacts. The EIS has not explained why the dry crossing method has been selected for the Susquehanna River, which has water quality impairments related to metals and a fish consumption advisory for PCBs. The EIS describes PCB concerns for the Lehigh River; however HDD is proposed at this location. Discussion of this crossing on page 4-45 states that under the HDD method no in-water work would be conducted, there would be no disturbance of sediments or water quality impairment during construction. We recommend that FERC evaluate the likelihood and potential effects

resulting from the disruption and mobilization of river bottom sediments that may contain PCBs, as well as apply these concerns equally to all crossings where PCBs are a concern.

The EIS concludes that no long-term effects on surface waters are anticipated as a result of construction and operation of the project; no designated water uses would be permanently affected because the pipeline would be buried beneath the bed of the waterbodies, erosion controls would be implemented during construction, and streambanks and streambed contours would be restored as close as possible to preconstruction conditions. It is unclear what these conclusion are based on. No conclusions on the short-term effects have been presented. Although erosion controls and restoration may be utilized, we recommend that FERC consider the effectiveness and potential failure of these measures. EPA encourages FERC to fully consider long and short-term effects to waters.

**7) <u>Vegetation, Wildlife, Public Lands</u>**

The EIS recognizes that impacts on forest habitat could include fragmentation and edge effects. Project construction would impact 633 acres of forested area, and 452 acres of forested areas impacted during construction would be retained for operational use. It is stated that the proposed pipeline route was sited to avoid areas containing large, interior forested stands where possible, and when forests could not be avoided, proposed routing through a forest was accomplished by locating the pipeline as far from the interior portion of the forest as practicable to maximize preservation of interior forest habitat. The EIS did not provide documentation of these efforts. EPA is concerned that values of forest resources and the indirect impacts to forests, particularly interior forests, were not fully evaluated.

We recommend that the importance of interior forest habitat be discussed and impacts be quantified. Newly created edge habitats would be established by maintenance of the permanent right-of-way, and the indirect impacts could extend for 300 feet on each side (600 feet total) of the new corridor into the remaining interior forest blocks. EPA recommends estimating the number of interior forests bisected, acreage affected, interior forest permanently eliminated and converted to forest edge habitat, and address reduced core and forest block sizes in the EIS. The avoidance and minimization of impacts to interior forests or consideration of these resources during pipeline routing, beyond utilizing collocation, is not apparent in the EIS. If measures have been taken, please describe and discuss them in the EIS.

The Project would cross areas identified as unique or exemplary wildlife habitats, including the Bear Creek Preserve, Sourland Mountain Region, State Game Lands, Deer Management Areas, and Important Bird Areas (including Hickory Run State Park, Kittatinny Ridge, Musconetcong Gorge, Everittstown Grassland, Baldpate Mountain, and Pole Farm). Pipeline construction and operation will introduce a new route for invasive plants to enter this area and the destruction of native trees and migratory bird habitat. If construction in these areas includes blasting, pipeline construction may alter ground or surface water flow conditions. Potential impacts resulting from stream and wetland crossings in these areas should also be considered. EPA is concerned that impacts to these areas may not have been fully avoided and minimized, sufficiently evaluated and appropriate compensatory mitigation may not be available. We recommend that FERC consider affording special protection to some of these areas, such as Sourland Mountain which the largest contiguous forest in central New Jersey. We also recommend that FERC further consider opportunities for collocation with another pipeline or

road. If no opportunities exist, EPA recommends that FERC request PennEast to avoid the forest entirely.

We recommend that assessment of ecosystem service of forest be included in the EIS. This would include evaluating mitigation for lost services, such as carbon sequestration.

**8) Rare, Threatened and Endangered (RTE) Species**

Five federally listed threatened or endangered species have been identified as potentially occurring in the project area, including the Indiana bat and northern longeared bat, bog turtle, dwarf wedgemussel, and northeastern bulrush. The Pennsylvania Fish and Boat Commission (PFBC) further identified the Atlantic sturgeon and shortnose sturgeon that are listed under both the Endangered Species Act (ESA) and two applicable state endangered species laws.

EPA is concerned that RTE species surveys and reports are incomplete and were not available for the DEIS. Although FERC has recommended that surveys be completed prior to construction, page 4-93/94 states that PennEast would pursue access through eminent domain at which time surveys would be completed if the Commission decides to authorize the project. It appears that this information will not be available prior to FERC's decision and will therefore not available to be considered and incorporated into the decision-making process. There may not be sufficient information for FERC to make a fully-informed decision as to the project's effect on RTE species. The absence of this information at this time drastically reduces opportunities to avoid and minimize impacts to key RTE habitat as well as consider and incorporate route and construction changes specific to RTE species. This information should be considered, in consultation with U.S. Fish and Wildlife Service (FWS) and other agencies, and factored into any decisions made by FERC on this project.

Please update the status of consultation with FWS, and include all correspondence relating to ESA requirements in the EIS. The status of consultation with resource agencies on migratory birds should also be updated in the EIS. We recommend that potential impacts on migratory birds and avoidance and minimization efforts be clearly addressed in the EIS. Migratory bird surveys on public lands in New Jersey have been requested by NJDEP Division of Fish & Wildlife Endangered and Nongame Species Program (ENSP), however only 7% has been completed. We recommend that the EIS clearly state if FWS recommendations for adaptive management and conservation for migratory birds and tree clearing will be followed. Any deviations from these recommendations should be clearly stated and addressed. EPA urges FERC require the applicant to adhere to all FWS, PFBC and NJDEP-ENSP recommendations and conditions. We recommend avoidance and minimization measures that have been committed to be captured in the Record of Decision and Certificate.

**9) Cultural Resources**

PennEast has initiated Section 106 consultation under the National Historic Preservation Act (NHPA) with the State Historic Preservation Offices (SHPOs) in Pennsylvania and New Jersey and ongoing communication and coordination has occurred since August 2014. Although cultural resources will be impacted by the proposed pipeline project, the SHPO's involvement ensures that resources will be protected and preserved appropriately within the bounds of Section 106 of the NHPA. EPA strongly supports and agrees with the recommendations provided on pages 5-14 and 5-15 of the DEIS which (in summary) states, "...we are recommending that

PennEast not begin construction until additional required surveys are completed, survey reports and treatment plans (if necessary) have been reviewed by the consulting parties, and we provide written notification to proceed. The studies and impact avoidance, minimization, and measures proposed by PennEast, and our recommendation, would ensure that any adverse effects on cultural resources would be appropriately mitigated." If this recommendation is followed, EPA would be assured that cultural resources would be addressed appropriately. The following comments emphasize the need to adhere to this recommendation and to ensure that all required surveys/reports are completed and approved by the agency authority (Pennsylvania and New Jersey SHPOs) prior to pipeline commencement.

EPA appreciates that the EIS Table 4.9.1-1 (Correspondence with the Pennsylvania SHPO) provides a list of correspondence exchanged between PennEast and SHPO which includes a brief summary of the letter. Although cumbersome and costly to include the actual letters exchanged in an Appendix, it would be helpful to have the opportunity to read the letters or to have a more in depth summary of the actions proposed and provided in Table 4.9.1-1. For instance the PA SHPO, in a letter dated April 14, 2016, provided comments on PennEast's archaeological survey addendum report, but Table 4.9.1-1 does not list or summarize the SHPO's comments. If the letters cannot be included in an Appendix, please provide a summary of the comments provided by resource agencies to allow better understanding of the potential impacts and mitigation proposed. In addition, please note that the following recommendation found on pages 5-14 is in line with this comment – "We are recommending the PennEast provide documentation of Pennsylvania and New Jersey SHPOs' concurrence with PennEast's proposed avoidance, resource identification/recommendations, updated documentation, avoidance plans, and evaluation reports/treatment plans, when necessary."

**10) <u>Conservation and Visual</u>**

The proposed action would cross several lands that are part of conservation programs. FERC has not provided an appropriate level of analysis regarding the impacts of constructing and operating the PennEast Pipeline on land preserved by Non-Governmental Organizations (NGO) in New Jersey, such as the Nature Conservancy, the New Jersey Conservation Foundation, or the Hunterdon Land Trust Alliance. The long-term effects that impacts to NGO land's may have on the future of conserving land in New Jersey was also not discussed. Land Conservation NGO's are dependent on donations of land and funds to preserve large portions of New Jersey for habitat, recreation, agriculture and other uses. The NGO's provide direct economic benefit to their employees, and by protecting forests and greenfields, they provide ecological services (such as carbon storage, nutrient cycling, water and air purification, and traditional resource uses and spirituality) that might not otherwise be affordable to the state. While the DEIS discussed several studies that show residential areas should not lose value due to a pipeline easement, the document has no evidence that the condemnation and industrial use of conserved land will not deter land or money donations to NGO's stewarding these land tracts, and therefore impact New Jersey's open space.

The EIS also states that some lands PennEast would acquire for pipeline installation and operation would lose conservation status. PennEast would acquire the development rights to install and maintain the pipeline within the permanent easement area. Although the EIS asserts that the majority of the land area subject to conservation easement restrictions would retain its conservation restriction outside of the PennEast ROW, the amount of lands enrolled or affected is unknown nor is the amount of land that will lose their status stated. We recommend that

FERC specify if entire parcels may become ineligible or if only portions under ROW easements will be ineligible. It is unknown what restoration measures are being proposed for these areas. We recommend considering all of this information prior to making the determination that impacts on these conserved lands will not be significantly impacted.

**11) Drinking Water, Public Health, and Environmental Justice**

The DEIS does not identify Source Water Protection Areas (SWPAs) as delineated by drinking water utilities in state-approved Source Water Protection Plans. These determinations are based on contaminant time-of-travel, and may include areas more than 3 miles upstream of potable surface water intakes. PennEast identified two public supply wells near the proposed pipeline in Alexandria Township in Hunterdon County, New Jersey, and identified three Wellhead Protection Areas (WHPAs) areas crossed by the proposed pipeline. The pipeline's proposed path is within 5 miles of 122 WHPAs; 120 of these WHPAs are located in New Jersey and known to PennEast through the publicly available information. WHPAs in Pennsylvania are not publicly available information, however the DEIS states there are two WHPAs in Pennsylvania within a 5-mile proximity. PennEast should work directly with state drinking water agencies and/or drinking water utilities to identify any areas where the proposed project crosses a SWPA and to locate WHPAs in proximity to, or intersecting with, the proposed pipeline route in Pennsylvania. We recommend that route deviations to avoid SWPAs and reducing proximity to wells and WHPAs be considered in order to minimize potential impacts on drinking water resources. The rationale or justification for eliminating or not adopting routes deviations should be provided. In some cases, the screening of these alternatives may reveal the potential for increased overall environmental impacts, some may need to be retained for detailed analysis.

The Environmental Justice (EJ) assessment should consider all of the impacts and benefits that may occur during the project in the study area or adjacent to it, that may reasonably be anticipated to have an impact upon minority and/or low-income populations. The localization, proximity, and magnitude of those impact needs to be taken into account. FERC should conduct meaningful engagement of EJ communities. The DEIS should analyze if a disproportionate number of EJ communities have construction-related displacements, construction-related truck traffic, potential surface water sedimentation in areas that are used for subsistence fishing, etc. We recommend a different methodology be used to establish minority population benchmarks in this assessment, in order to identify all at-risk populations as accurately and inclusively as possible. We suggest re-evaluating the EJ impact assessment using more protective thresholds.

In addition to considering EJ, we recommend that FERC consider children's health under Executive Order 13045 and consider whether it would be useful to employ elements of a health impact assessment to help define the services or interventions required to help to prevent or mitigate health problems associated to this type of project, if any, and inform decision-makers of potential outcomes before the decision is made. For example, these inquiries could allow FERC to more fully consider health impacts that could result from potential arsenic mobilization into water and allow input from the public and other stakeholders, including those potentially affected by the proposed action. EPA is available for further discussion and guidance on this matter.

**12) Air**

The General Area Layout around the compressor station diagrammatic for both alternatives is not provided in this DEIS. The report to contain a proper layout and at the very least, a diagrammatic clearly showing all of the compressor station components and proposed piping configurations with interconnects and associated equipment clearly shown. The absence of this information prevents a thorough review of the project. Based on our review of the information that has been made available, we are unable to confirm the figures given in table 9.1-3a and we are unable to confirm that the potential to emit is a reasonable estimate of the emissions. We are also not able to confirm that the project does not trigger New Source Review requirements.

We expect that a compressor station of this size may contain additional types of process units performing different functions that do not appear to be mentioned or considered in the EIS. For example, we recommend that emissions from the operation of all equipment be included and aggregated, such as emergency flares. The report mentions various tanks but does not specify size or clearly state the tanks' functions. One of the tanks specified is a condensation tank. This tank might imply that the facility is also using dehydrators. This further implies that flash emissions should be included in the emissions calculations. The proposed interconnects have line heaters which imply that there is also pressure reducing units located at interconnects, which have associated fugitive emissions. We also recommend that emissions from launching and receiving operations be presented; emissions associated with interconnects may also need to be aggregated with compressor emissions.

The EIS does not provide sufficient air data, calculations and explanation for the basis on which determinations were made. Although the EIS estimated operating emissions for the Kidder CS, there is no data, calculation and assumptions that demonstrate how the operating emissions were determined. There is no basis given for the determination of 48 startups and shutdowns per year. Additionally, there is no data, calculation and assumptions that demonstrate how the emissions are offset by operational time between each shutdown and the next start up. EPA requests that FERC explain and demonstrate how this is possible, and provide data and calculations used to estimate operational emissions.

The evaluation to determine the feasibility of installing electric motor driven compressor units at the Kidder CS is deficient with regards to the comparison done with the PJM regional grid system mix by fuel to the compressor emissions provided in Table 4.10.1-7. The evaluation used 2010 emissions from the PJM system mix to adjust the 2004 rates. It is noted that the 2004 rates should be adjusted to the most recent PJM rates for 2016 which have been reduced significantly. For example the percent reduction in NOx emissions rates for the PJM mix from 2010 to 2016 is 47.5 percent. This makes the results in this DEIS significantly skewed. EPA recommends the analysis be done as a cost benefit analysis similar to a Best Available Control Technology analysis as discussed in federal regulations at 40 CFR 52.21, because it includes both capital costs and operational costs.

The EIS discusses the possibility of using waste heat electric generation in conjunction with gas fired turbines. The discussion seems to gloss over the feasibility of this technology in this particular situation and makes some contradictory statements to come to a conclusion that the use of waste heat generation is not viable for the proposed Kidder CS. The analysis presented is insufficient to support this conclusion. A more robust and detailed analysis may be necessary. Contradictory statements should be clarified in the EIS

We recommend that the DEIS address the aggregation of emissions sources in the scope of this project. There is a policy followed by the Pennsylvania Department of Environmental Protection (PADEP) to analyze whether or not air emissions from wells, compressor stations, interconnects and processing plants should be aggregated as one emissions source for the purposes of determining whether these aggregated emissions should be subject to Title V permit requirements. This method of analysis is based on PADEP's guidance entitled Guidance for Performing Single Stationary Source Determinations for Oil and Gas Industries, Document Number 270-0810-006, effective October 6, 2012 and is informed by EPA's policy regarding a 3-pronged approach toward analyzing whether or not emission units can be considered as functioning as a unit. The guidance states that air emissions sources may be treated as a single source for permitting purposes if they meet the applicable two or three part regulatory test. This is discussed in more detail in the guidance. There are other emissions facilities downstream of the Kidder CS that may be considered as functioning along with the proposed compressor station as a unit: the compressed gas transmission pipeline and the next proposed interconnect in Northampton Co. An example of such an analysis is illustrated in a review memo for the general plan approval for NFG Midstream Claremont east station Permit number GP5-42-243A. In addition, there may be additional existing compressor stations that may be considered as acting as a unit with this proposed station. The facility must determine if this is the case and include it in the analysis if appropriate. We recommend that the project be analyzed to determine if any of the upstream and downstream facilities could be considered operating as a unit in conjunction with the proposed compressor station.

**13) <u>Cumulative Impacts</u>**

EPA is concerned that the temporal and geographic scope of the study is narrow, which has led to a limited analysis of cumulative impacts. Defining the geographic and temporal framework is the starting point of a cumulative impacts analysis.

Page 4-273 defines the project's region of influence, which is the area for which the project could contribute to cumulative impacts. For example it appears that the region of influence used for geology, soils, land use, residential areas, visual resource, air quality and noise would be within 0.25 miles of project construction were considered. Long-term noise impacts within the same NSAs as the Kidder CS. Waterbody and wetland crossings, groundwater, vegetation and wildlife within the same sub-watersheds crossed by the project. Longer-term air quality cumulative impacts were considered within the Air Quality Control Region (AQCR) crossed by the Kidder CS.

Cumulative impact analysis included recently completed, ongoing, and planned projects in the project area, which appears to exclude past and reasonably foreseeable actions. Considering past, present and reasonably foreseeable actions is important as cumulative impacts can occur to resources even if impacts do not occur concurrently. Though construction impacts can be short-termed, there are likely prolonged impacts for instance associated with forest fragmentation, invasive species, etc. Even projects that do not overlap geographically can contribute to cumulative impacts to streams, wetlands, forests, habitat, and other resources. We recommend FERC consider expanding the cumulative impact study beyond what is currently considered in the DEIS. It is important to analyze the trends in resources, to identify if there have been repeated impacts or degradation of the resources. A thorough analysis of impacts could help guide the selection or placement of appropriate mitigation for PennEast impacts or highlight

areas where additional avoidance and minimization may be warranted. EPA would be interested in discussing the selection of a more appropriate and inclusive boundary with FERC.

EPA is concerned about cumulative impacts to aquatic resources, groundwater, and water quality. We recommend that the cumulative impact analysis of surface and groundwater be expanded, including cumulative impacts to water quality, headwater streams, high quality and/or sensitive aquatic resources. Aquatic resources have the potential to be cumulatively impacted by many factors, including waterbody crossings, change in recharge patterns, clearing, blasting, and water withdraws for hydrostatic testing. It may be prudent to consider these impacts in combination with other past, present and reasonably foreseeable actions at the watershed scale.

EPA recommends that the EIS study look at recent pipeline construction project to evaluate "lessons learned" and impacts, which could include construction, operation and implementation of mitigation. This information can be incorporated into direct, secondary and cumulative impact analysis, and provide recommendation for BMPS and other mitigative approaches for impacts. We recommend that FERC present and evaluate where failures during construction and operation of pipelines have occurred (for instance that lead to erosion and sediment control issues, turbidity in streams, impact to surface or ground water supply, introduction of invasive species). Consider if work stoppages were/will be needed; consider contractor rewards for exemplary work and penalties for noncompliance with best practices.

EPA is concerned by the potential cumulative impact which could result from the preferred alternative, Marcellus Shale development, and other FERC-regulated and non-jurisdictional actions. Natural gas, both FERC jurisdictional and non-jurisdictional, electric generation and transmission projects, transportation projects, and commercial and large-scale residential developments were identified as types of actions that would potentially cause a cumulative impact when considered with the PennEast Pipeline. Page 4-274 states that construction of the PennEast Pipeline would potentially increase demand for natural gas, which could increase Marcellus Shale natural gas extraction and therefore increase the negative environmental impacts associated with such development. As this is noted in the EIS, we recommend it be incorporated into the cumulative impact analysis.

In areas where rapid natural gas development have the potential for cumulative impacts to occur, EPA recommends that a more detailed cumulative impact analysis in this area be conducted. A more detailed consideration of cumulative impacts may include a more detailed breakdown of past, present, and reasonably foreseeable actions, consideration of additional avoidance and minimization efforts, as well as looking for additional opportunities to collocate. Presenting the collocation rate by county or watershed may be a useful way to begin considering avoidance and minimization efforts in areas with cumulative impact potential.

The cumulative impact analysis relies on possible state and federal measures, restrictions and requirements for other past, present and reasonably foreseeable actions to minimize the potential for long-term resource losses, such as for aquatic resources, RTE, and land use. The EIS also relies on the SPCC plans, E&SCP, project BMPs, and FERC Plans and Procedures to minimize and mitigate for resource-specific cumulative impacts. We recommend that the cumulative impact analysis consider potential cumulative impacts regardless of the various prepared or required plans to be implemented by the project or other actions, or permits or regulatory thresholds. While it may be appropriate to recognize or consider the relation to these, please

keep in mind that this is not sufficient to determine potential effects of past, current and reasonably foreseeable future activities to resources or if/ how project impacts can be mitigated.

**14) Climate Change**

The discussion on climate change in the DEIS mentions the 2014 Draft CEQ Climate Change Guidance. Please note that since the release of the DEIS, CEQ released its final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in the National Environmental Policy Act Reviews (CEQ guidance). We recommend that FERC update this reference in the Final EIS.

Section 4.12.4.8, Climate Change, concludes that projected climate change effects in the Project area are not anticipated to exacerbate any other environmental impacts from the Project during its expected lifetime. EPA is concerned that this conclusion is not well supported by analysis or discussed in the EIS. Consistent with the CEQ guidance, we recommend that the EIS describe potential changes to the affected environment that may result from climate change. Including future climate scenarios, such as those provided by the USGCRP's National Climate Assessment,[1] in the EIS would help decision makers and the public consider whether the environmental impacts of the alternatives would be exacerbated by climate change. If impacts may be exacerbated by climate change, additional mitigation measures may be warranted. Use of NCA or other peer reviewed climate scenarios can inform alternatives analysis and possible changes to the proposal which may improve resilience and preparedness for climate change.

The CEQ guidance recommends that agencies quantify carbon sequestration implications, and outlines special considerations for agencies analyzing biogenic carbon dioxide sources and carbon stocks associated with resource management. Mitigation for these losses is also recommended. As the PennEast Project will remove 633 acres of forest, and permanently release the carbon stocks therein, EPA recommends that FERC analyze and consider mitigation (e.g. forest restoration) to make up for these carbon stock losses.

As the EIS notes on page 4-285, EPA has recommended that FERC also estimate GHG emissions from the development and production of natural gas being transported through the proposed pipeline, as well as estimate the GHG emissions associated with the end use of the gas. We note that the DEIS estimated that the potential end-use GHG emissions would be 23.5 million tons per year. Although the end use was included in the DEIS, the analysis would be improved by including emissions resulting from the development and production of natural gas being transported through the proposed pipeline.,

It is not clear if the operational phase GHG emission estimates include methane leakage. We recommend that FERC estimate expected GHG emissions from leakage and consider potential BMPs to reduce leakage of methane associated with operation of the expansion facilities. EPA has compiled useful information on technologies and practices that can help reduce methane emissions from natural gas systems, including specific information regarding emission reduction options for natural gas transmission operations. This information may be found at http://www3.epa.gov/gasstar/mehtaneemissions/index.html.

[1] http://nca2014.globalchange.gov/

We recommend that FERC consider adding similar analysis as was presented in the recent Atlantic Sunrise DEIS, Section 4.13.3.1, which estimated the number of wells permitted within 10 miles of the project, the rate that new wells could be added, and the number of wells required to provide quantities of gas to supply the project. These estimates do not necessarily have to include induced or indirect natural gas development or production, such estimations could be included more appropriately in the secondary effects analysis. We recommend the EIS estimate the number of wells required to supply the pipeline and the potential impact from these wells. This was done for land disturbance in Atlantic Sunrise, which estimated 9 acres per well pad. Impacts to other resources, including GHG estimates for climate change, can also be estimated.

EPA has recommended that FERC consider additional alternatives beyond the applicant's preferred alternative. Should additional alternatives be retained for detailed study, we recommend that the EIS estimate the GHG emissions potentially caused by these alternatives. These emissions levels can serve as a basis for comparison of the alternatives with respect to GHG impacts. There are a considerable resources, tools and methodologies to estimate project contribution to climate change. We strongly recommend that these be utilized in the EIS. Example tools for estimating and quantifying GHG emissions can be found on CEQ's NEPA.gov website.