



TOWNSHIP OF HOPEWELL

MERCER COUNTY

201 Washington Crossing Pennington Road
Titusville, New Jersey 08560-1410
609.737.0605 Ext. 664
609.737.6839 Fax
November 23, 2015

Honorable Norman C. Bay, Chair
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: Docket CP15-558-000
Proposed Gas Pipeline
PennEast Pipeline Company LLC
Hopewell Township, Mercer County**

Dear Mr. Bay:

The PennEast pipeline will cross a portion of the Hopewell Township Municipal Public Works property known as Hopewell Township Tax Block 92, Tax Lot 5. This particular tract of land is used for all municipal public works operations, tax assessor department operations and recreation department operations. All of the stated operations include public visitation and access. This land is used for fueling depot operations for all municipal vehicles including police and emergency services as well as fueling as a shared service for the Union Fire Company and the Hopewell Valley Regional Board of Education.

This PennEast proposal will negatively impact all Municipal Operations on this site and may impact the site attributes that may render the site unviable for use as follows:

- 1. Construction Access Road:** PennEast plans to use the drive that serves as primary public access to the Public Works site as its construction access road (AR105A and AR105B). The designation of a municipal access driveway as a construction access road demonstrates a lack of understanding by the PennEast design team of the municipal operations presently occurring on the site.

As proposed, construction access road AR105A and AR105B will isolate the municipal fuel depot and will prevent day-to-day municipal operations and public access to those municipal operations. Hopewell Township has no ability to relocate its municipal public works operations, its tax assessor or recreation department operations or its fuel depot without significant consequence to the public.

Honorable Norman C. Bay, Chair

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Construction Access Roads AR105A and AR105B must be relocated off of Tax Block 92, Tax Lot 5. This is the only remedy to avoid significant impacts to the existing municipal operations occurring on this site.

- 2. Potential Site Impacts:** The PennEast proposal is to use Horizontal Directional Drilling to avoid open excavations through the site. This method of construction, while potentially avoiding obvious impacts such as erosion, may create other impacts such as impacts to existing on-site groundwater well, on-site septic system, underground fuel storage tanks as well as creating pockets of gas build-up as discussed in the letter from M² Associates which is attached hereto for record purposes.

As a municipal public works site that provides 24/7 emergency support services for the Police, Office of Emergency Management and during catastrophic weather events such as Superstorm Sandy, it is imperative that the proposed pipeline and its construction have zero impacts to the site or the operations occurring at the site presently or anticipated in the future. Again, this is a municipal site used for the sole support of the Hopewell Township municipal government and the community it serves and to propose any activity which could possibly impact this site or these facilities is unacceptable.

Thank you.

Sincerely,



Paul E. Pogorzelski, P.E.

Township Administrator/Engineer

C: Hopewell Township Committee
Steven P. Goodell, Esquire
Governor Chris Christie
U.S. Senator Robert Menendez
U.S. Senator Cory Booker
Congresswoman Bonnie Watson Coleman
Mercer County Board of Chosen Freeholders



M² Associates Inc

Providers of Geologic, Environmental, & Groundwater Consulting Services

November 18, 2015

Paul Pogorzelski, PE
Township Administrator/Engineer
Hopewell Township
201 Washington Crossing-Pennington Rd
Titusville, 08560-1410

Re: Geologic Evaluation of Potential Impacts from Penn East Pipeline near Public Works Facility in Hopewell Township, Mercer County, New Jersey.

Dear Mr. Pogorzelski:

As per the request of the Hopewell Township Committee, M² Associates reviewed the proposed Penn East pipeline plan with the most recent revision date of 9-23-2015 entitled "Proposed 36-inch Pipeline HDD Exhibit Plan and Profile, Washington Crossing Pennington Road, Hunterdon/Mercer Counties, NJ." This plan indicates the location and depth profile for the proposed Penn East pipeline in proximity to the Hopewell Township Public Works Garage, which is located at 203 Washington Crossing-Pennington Road in Hopewell Township, New Jersey.

The pipeline is proposed to closely parallel an existing overhead electrical powerline easement beneath the Township property and trend in a southeasterly direction. The 36-inch diameter pipeline will be installed in a borehole drilled using the horizontal directional drilling (HDD) technique. The borehole will start in a wooded area at a point located approximately 340 feet northwest of the Township property boundary. The ground surface elevation is 135 feet above mean sea level (ft amsl) at the point proposed for the start of drilling.

Using the directional boring technique, the pipeline will be installed at an initial angle of 14° from horizontal and within 70 feet to the southeast of the drilling starting point; the pipeline will be at an elevation of 117 ft amsl. Beneath Woolsey Brook, which is located approximately 270 feet to the southeast of the drilling starting point, the pipeline will be approximately 33 feet below ground surface or at an elevation of approximately 73 feet amsl. The ground surface slopes to the southeast toward Woolsey Brook. The slope reverses on the other side of the creek and ground surface elevations increase toward the equipment and supply storage area for the Township.

Beneath the public works storage area north of the main garage and administrative offices building, the pipeline will be approximately 160 feet below ground surface and at its lowest elevation of 10 ft amsl. At this point, the pipeline borehole will deflect from sloping to the southeast to horizontal and maintain an elevation of 10 ft amsl for approximately 503 feet.



Beneath the parking lot immediately east of the public works administrative offices the pipeline will be approximately 135 feet below ground surface and at an elevation of approximately 10 feet amsl. Beneath this parking lot, the borehole will deflect upward from horizontal to gain elevation toward the finish point of the borehole south of Washington Crossing-Pennington Road.

Beneath the approximate center of Washington Crossing-Pennington Road, the pipeline will be approximately 85 feet below ground surface or an elevation of approximately 50 ft amsl and beneath the pond to the south of the road, the pipeline borehole will range in depth from approximately 60 feet beneath the northern bank to 41 feet beneath the southern bank. Ultimately, the borehole will exit the subsurface at an angle of approximately 12° and an elevation of 170 feet amsl. The horizontal distance for the borehole from the point at which drilling commences to the point at which drilling terminates is 2575 feet and the total length of the borehole is 2600 feet.

Based on New Jersey Geological Survey (NJGS) mapping, the borehole will intersect the Passaic Formation red and gray shale, sandstone, and mudstones beds. The mapping indicates that these beds are striking N83°E to N89°E and dipping 15° to 16° to the northwest in proximity to the Public Works facility. The NJGS mapping does not indicate the presence of any major faults along the proposed borehole pathway beneath the Township property. However, given the proximity and extensive movement along the Hopewell Fault, and the numerous splays associated with this fault, it should be expected that significant bedrock fracturing will be encountered during drilling.

Fractures formed as a result of faulting, and bedding plane parallel fractures typically encountered in the Passaic Formation, will contain groundwater. Groundwater in these fractures is the source of water for the municipal building located to the east of the pipeline and the public works facility. Groundwater in this area of the Township has been shown to contain chlorinated volatile organic compounds. The vertical and horizontal extents of contamination and the source are not known. These types of contaminants, which have a density greater than water, tend to “sink” in Passaic Formation aquifer systems. The drilling of the borehole for the pipeline could cause the uncontrolled migration of contaminants if encountered. The borehole can also serve as a future conduit for contaminants to migrate to other areas.

In addition to the concern that the borehole could permit uncontrolled migration of chlorinated solvents in groundwater, the depth and location of the pipeline with respect to the administrative offices and public works garage could result in adverse conditions within these facilities. While ordinarily it might be assumed that 135 feet of vertical separation between the pipeline and public works garage and administrative office building would minimize potential concerns; given the fractured nature of the Passaic Formation rocks beneath this area of Hopewell Township, the depth of the pipeline raises concerns to the public works building and the associated administrative offices.

A natural gas leak from a pipeline at shallow depths migrates upwards toward the atmosphere through soils and possibly weathered bedrock. The porosity of these soils and weathered materials is typically much greater than Passaic Formation bedrock.



Water: A Natural Renewable Resource

The Passaic Formation layers do not have primary porosity and therefore, groundwater and/or natural gas leaking from a pipeline, must migrate through interconnected fractures. Natural gas released from a pipeline leak 135 feet below the parking lot/building will need to migrate upward through bedrock fractures before discharging to the atmosphere. Bedding plane fractures, joints, and faults control groundwater movement in the Passaic Formation. These same tectonic features will influence pathways for escaping natural gas. Groundwater in these same bedrock openings will further complicate pathways for escaping natural gas. Groundwater will limit upward migration and could become enriched in natural gas as some of the gas dissolves in water during its upward migration.

While a leak from a shallow pipeline could discharge quickly to the atmosphere, a leak from a pipeline 135 feet below ground surface could migrate to areas beneath and within the garage and administrative offices. A buildup of gas could be catastrophic within this facility.

The horizontal separation distance of 65 feet between the pipeline and building does not offer the same level of protection that could be assumed for a shallow pipeline. The potential is greater for a leak near the public works garage and administrative offices because of the bending upward of the borehole near the northeast corner of the building. Natural gas released from the pipeline could readily migrate across this horizontal distance as it progresses upward toward the atmosphere. The collection of the gas beneath or within the building could have critical consequences.

In summary, Penn East is proposing to drill a directional borehole to install a 36-inch diameter pipeline to transmit natural gas near the Hopewell Township Department of Public Works garage and administrative offices complex. The pipeline will be installed at a depth of approximately 135 feet below ground surface in proximity to the administrative office section of the main public works building. The borehole will penetrate fractured Passaic Formation rocks containing groundwater. Groundwater in this area of the Township contains chlorinated solvents from an unknown source and the borehole could induce the uncontrolled migration of these contaminants to other areas of the Township. The depth of the pipeline, the nature of the Passaic Formation rocks in which it will be installed, and the presence of groundwater could result in the uncontrolled migration of natural gas from a leak in the pipeline. The collection of the gas within or beneath the public works building could result in catastrophic conditions.

If you have any questions, please call Matt Mulhall at (908) 238-0827.

Respectfully submitted,
M² Associates Inc.

A handwritten signature in blue ink, appearing to read "Matthew J. Mulhall". The signature is fluid and cursive, with the first and last names being the most prominent. It is positioned above the printed name of the signatory.

Matthew J. Mulhall, P.G.