

TOWNSHIP OF KINGWOOD

Environmental Commission Meeting:
Fourth Tuesday of Each Month – 7:30pm
Municipal Building:
Corner of Rt. 519 & Oak Grove Rd.
Fax: (908) 996-7753



Address Reply To:
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P.O. Box 199
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Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street Northeast, Room 1A
Washington, DC 20426

Re: Docket CP15-558-000 – Proposed PennEast Pipeline Project
Draft EIS fails to address Ground Water Impacts

September 11, 2016

Dear Ms. Bose,

The Kingwood Township Environmental Commission is submitting these comments in opposition to the proposed PennEast Pipeline Docket CP15-558-000. Kingwood Township Environmental Commission is an intervenor in this matter and Kingwood Township is an impacted landowner on the proposed route. Both the construction and the long term functioning and maintenance of this pipeline (and the others that PennEast will inevitably add to its greenfields right-of-way) would put our ground water at risk and violate the Safe Drinking Water Act. It has been demonstrated that there is no need for this pipeline carrying an additional 1.1 million dekatherms per day year-round, which would displace existing sources. In fact, no residents of Kingwood are served by natural gas at all. Instead, we are in effect a net exporter of sustainable solar energy.¹ We can and do obtain our energy needs from other, more sustainable, sources, but we cannot replace our precious ground water.

The draft Environmental Impact Statement (DEIS) released by FERC on July 22, 2016 does not accurately describe the ground water resource or evaluate the potential impacts, therefore it does not fulfill FERC's NEPA obligation.

In the following comments, we have attempted to point out discrepancies, errors, unanswered questions and data gaps. However, the sheer volume of inadequacies and unfairly short comment period precludes us from being as comprehensive as we would like. For this reason, we request a second public comment period on a second draft EIS before FERC attempts to finalize the EIS.

DEIS statement on page ES-4: *"Naturally occurring arsenic is present in trace amounts in the rocks for the Newark Basin of southeastern Pennsylvania and New Jersey. PennEast conducted a leachability evaluation of rock samples collected along the proposed pipeline route. Based on the results of this study, we conclude that no mitigation measures related to arsenic mobilization are necessary during Project construction and operation."*

Comment on arsenic and other pollutants: The DEIS contains NO factual data to conclude that arsenic is of no concern. The DEIS ignores Prof. Onstott's comments^{2,3,4,5} (and others) that were submitted to FERC regarding the mobilization of arsenic during and after pipeline construction. Prof. Onstott is a

Professor at Princeton University, one of the most esteemed universities in the world. Prof. Onstott has published many papers on the mobilization of arsenic into the environment and is considered an expert in this field. In addition, according to Dr. Julia Barringer (retired from USGS and author of extensive research on arsenic in the environment and also an expert in this field) the reducing environment resulting from cathodic protection (which is necessary to prevent corrosion of the pipeline) would be likely to increase arsenic in ground water.⁶ FERC's use of one unpublished study to support their conclusion that arsenic is not a valid concern is unscientific at best. Since the cited study (Serfes, M.E. 2016. *Final Report of U.S. EPA Method 1627 Kinetic and HDD Leach Test Results and Implications for Arsenic Mobilization Related to the Proposed PennEast Pipeline*. Prepared for: Hatch Mott MacDonald, Inc. for PennEast Pipeline) has not been made available to the public, it is impossible to fully evaluate its merits or applicability. However, based on the title, we suspect it is limited in scope and applicability, and therefore does not represent the weight of evidence on the potential of the pipeline to increase arsenic in groundwater.

To reiterate our previous comments to FERC that FERC continues to ignore, we have concerns about the pipeline's impacts on ground water quality, including arsenic, sediments, bacteria, radionuclides, radon, nutrients, pesticides and disinfection byproduct precursors. Several New Jersey Geological Survey reports document that the ground water supply is vulnerable to arsenic levels in ground water and we believe that evidence points to the probability that the pipeline would exacerbate the problem and impact public health. The arsenic is due to the Lockatong argillite and Brunswick shale belt that runs through Kingwood Township and along the proposed pipeline route in Hunterdon and Mercer Counties. The Private Well Testing Act results from 2002 – 2007 revealed that 41% of wells tested in the township exceeded the NJ arsenic standard. The report concluded that 1.) certain geologic formations in the Piedmont region contain layers that may leach arsenic into the ground water as it passes through, and 2.) wells drilled into bedrock aquifers are more susceptible to fecal coliform contamination than wells in the coastal plain.⁷ In a 2005 study by NJDEP of noncommunity water sources (e.g. schools, restaurants and churches), it was determined that the majority of Kingwood's noncommunity water sources are highly susceptible to contamination from inorganics (including arsenic), radionuclides and radon; and are moderately susceptible to contamination from nutrients, pesticides and disinfection byproduct precursors.⁸ Construction of the pipeline, including extensive blasting throughout our township, will release sediments and potentially other contaminants into the fractured bedrock. Any of these fractures that connect to wells will degrade the drinking water in those wells. If construction activities damage septic systems or enhance fracture connections between septic systems and wells public health is at risk.

DEIS statement on page 4-127, section 4.7.3.1: "Temporary impacts during construction of the pipeline facilities in residential areas could include... potential damage to existing septic systems or wells."

Comment on damage to septic systems or wells: This statement represents the *entirety* of the DEIS discussion of potential damage to septic systems and wells (the non-public Well Monitoring Plan *might* discuss this, but we can't know that, since it hasn't been made public). 100% of Kingwood (and most of the surrounding region) relies on individual private septic systems and individual private wells. While 6 to 9 months is "temporary" compared to the geologic timeframe, a household can't function without a properly functioning and safe septic system and well. Disregarding the importance of "temporary" impacts also ignores PennEast's future plans for colocation (publicly touted by PennEast subscribers for the money-making potential) of multiple additional pipelines in its right-of-way. Repeated waves of "temporary" impacts to people's lives, health and the environment cannot be ignored as insignificant. The cumulative impacts of Pipeline construction activities, including blasting and movement of extremely heavy equipment, risks damaging septic systems and wells, but the DEIS does not address this.

DEIS statement on page 4-26: “In New Jersey groundwater provides 36 percent of the domestic public water and 16 percent of the private supply.”

Comment on contribution of ground water: This statement is misleading (and also from an unsubstantiated source) and not applicable to the area surrounding the proposed PennEast pipeline route. In Kingwood Township 100% of the residents and businesses derive their water supply from wells. In fact, 100% of the water supply for the entire impacted region in New Jersey, with the exception of Lambertville, is ground water. These facts were abundantly reported in comments during pre-filing and scoping periods and still PennEast and FERC do not comprehend the importance of protecting our irreplaceable and scarce ground water resource. It would not be unreasonable to conclude that these irrelevant statistics were presented merely to discount the importance of ground water protection in the region.

DEIS statement on page 4-26: “...the Project **may** [emphasis added] encounter groundwater during construction activities...” and “PennEast has conducted a boring program to identify areas of potential liquefaction due to earthquakes and have found in general the water table is ten to twenty feet below the ground surface”

Comment on depth to high water table: The information presented in the DEIS ignores the shallow depth to water table in the majority of Kingwood Township. According to NRCS soils data, which local experience confirms, the water table in Kingwood in many locations is at the land surface (Kingwood ERI, 2009, figure 4c).⁹ Another easily accessible data source which conflicts with FERC’s statement is the USGS ground water monitoring network. The network has recorded minimum depth to well water level of 0.29 to 11.3 feet¹⁰ for the 5 wells monitored within Hunterdon County, which represent the Precambrian, Passaic and Stockton aquifers (which are the aquifers crossed by the proposed route). Apparently, PennEast did not complete enough borings at appropriate locations within the proposed path of the pipeline to make such a generalized conclusion about the depth of bedrock along the proposed route. Failure to accurately account for the fact that there would be direct and permanent contact between ground water and the pipeline trench during and after construction is problematic. The pipeline trench may act to as a conduit for pollutants, temperature changes and alterations of flow patterns. Likewise, it’s unlikely that a permanent saturated condition is good for the pipeline itself.

DEIS, page 4-26: Table 4.3.1-1 Principal Bedrock Aquifers Crossed by the PennEast Pipeline Project

Comment on omission of data: This table is incomplete and inaccurate. FERC entirely omits the argillite and shale bedrock aquifers (Lockatong, Passaic and Stockton Passaic formations of the Late Triassic Newark Group) that underlie the entire 7 mile length of the proposed route through Kingwood, as well as the other NJ municipalities. Kingwood residents derive 100% of their water supply from these aquifers.

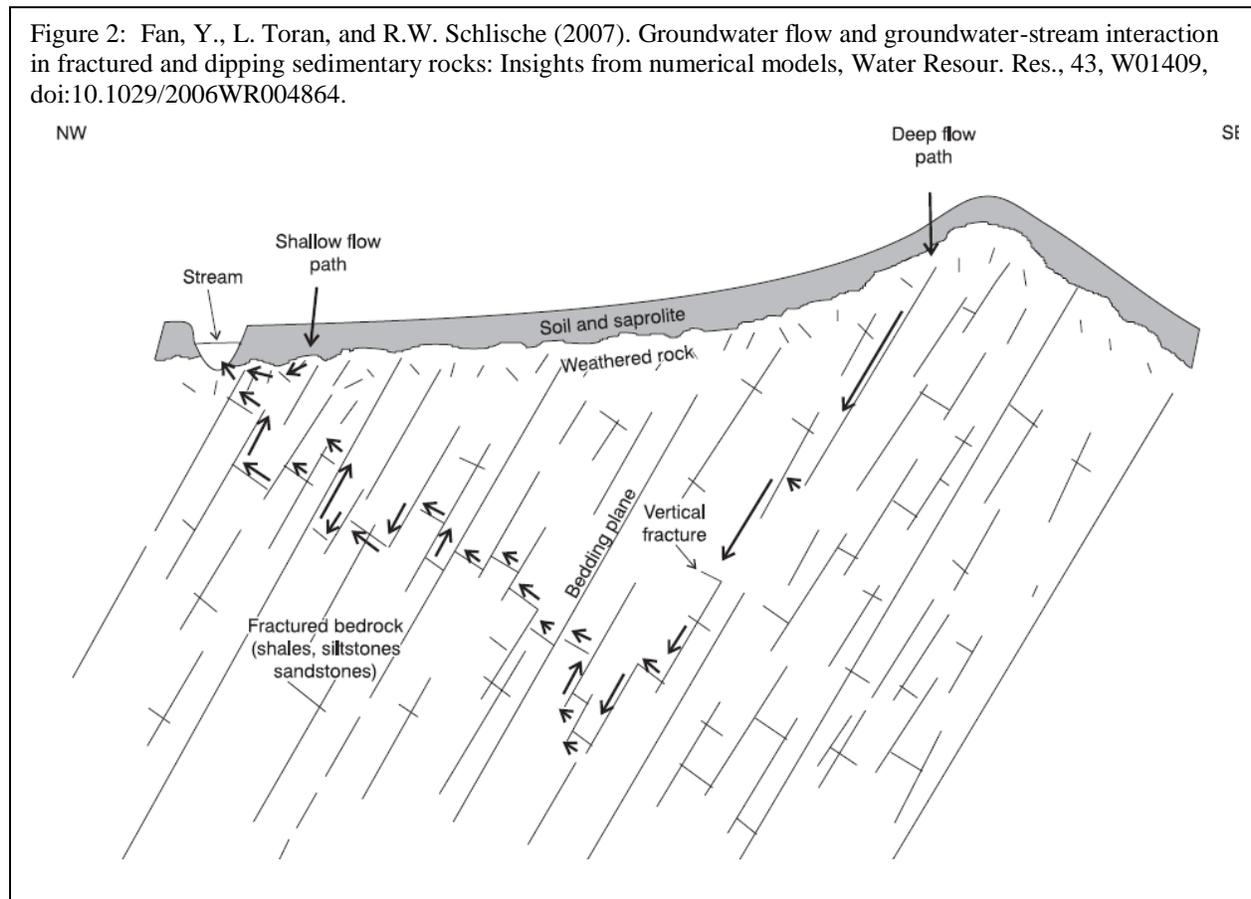
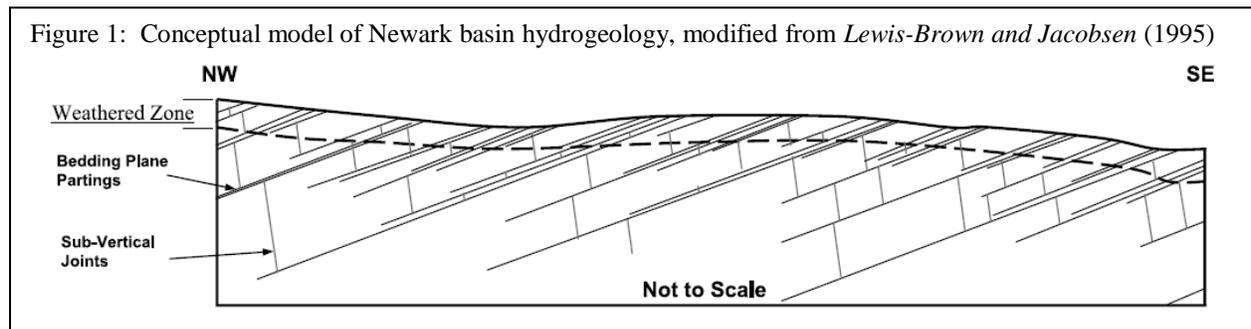
DEIS, page 4-28: Section 4.3.1.2 Bedrock Aquifers

Comment on bedrock aquifers: This section devotes a scant 1 paragraph to the aquifers of NJ, using only a fact sheet on the Physiographic Provinces of New Jersey as a reference. This boilerplate language diminishes the importance of our ground water and fails to demonstrate an understanding of ground water science. This section of the DEIS should accurately describe the characteristics of the aquifers the pipeline would go through.

The discussion of the impact of excavating the 7-10 ft (~2-3 m) trench on ground water resources is misleading and indicates a lack of understanding of the local geology. Soil cover is thin and depth to bedrock can be as little as 1-2 meters. The soil is clayey with low permeability. The bedrock is a dense, impervious sedimentary rock (Passiac and Lockatong Formations) that is highly fractured (Figure 1). In

some localities a highly weathered zone (saprolite) occurs. Ground water originates as infiltration of local precipitation that percolates slowly through clayey soils (plus saprolite) and even more slowly through the tortuous pathway of bedrock fractures. Primary porosity, permeability and storage in this soil/rock system are very low resulting in observed high seasonal water table depths shallower than 1 meter. The ground water system drains slowly as it consists of dipping, layered fractured rocks where ground water flow is restricted to bedding planes. Vertical fractures do not cut extensively across beds, but may provide local routes between beds (Figure 2).

The PennEast E&SCP statement that the pipeline would be above the water table and have no effect is **erroneous** and not based on an understanding of the local geology. The stated “special dewatering methods” involving the installation of trench breakers that would control water flow would be absolutely **ineffective** in this area of seasonally high water table. The disturbance would not be “temporary”, but would be very likely to **permanently affect** the shallow recharging system.



DEIS page 4-31 to 4-32: section 4.3.1.5 Water Supply Wells

Comment on water supply wells: This section is only 4 paragraphs and again exhibits a lack of understanding of the unconfined fractured bedrock aquifers that underlie our township and the region. Why does PennEast plan to inventory and monitor only wells within 150' of the pipeline route? In our geology, wells may be impacted at distances of at least 0.8 miles. The description of the terms of the Well Monitoring Plan indicates only what PennEast may do in the future, after problems occur. This section is inadequate and does not state how wells will be protected during construction of the proposed pipeline.

DEIS page 4-31: "PennEast has prepared a Well Monitoring Plan to outline procedures for pre- and postconstruction monitoring of all identified drinking water supply wells We have reviewed the Well Monitoring Plan and find it acceptable."

Comment on Well Monitoring Plan: Why has the Well Monitoring Plan not been made public? As mentioned above, we find the 150' distance to be arbitrary and capricious. It would not protect our ground water resources and it would risk public health. It would put the burden of monitoring and remediation on landowners. Again, we rely 100% on ground water, without which we cannot live here. We believe that no person with an understanding of the characteristics of our unconfined fractured bedrock aquifers would find the Well Monitoring Plan, as outlined in the DEIS, acceptable.

DEIS, page 4-31 to 4-32: "Because PennEast has not conducted surveys for water supply wells along the entire Project, we recommend that:

- "Prior to construction, PennEast should complete all necessary surveys for water supply wells and groundwater seeps and springs, identify public and private water supply wells within the construction workspace, and file with the Secretary a revised list of water wells and groundwater seeps and springs within 150 feet of any construction workspace (500 feet in areas characterized by karst terrain)."

Comment on private wells: It is not necessary to have survey access to know that every property with a home within Kingwood has a private well. Second, the inventory must include wells within at least 0.8 miles of the proposed route. We also take issue with FERC's statement that it *recommends*, but not that it *requires* this information to be completed prior to construction*. FERC's and PennEast's disregard for the importance of wells and ground water is reprehensible.

DEIS page 4-33: "Based on the geology and hydrogeology in these areas it is expected that the pipeline would be located above the water table and therefore not encounter potential groundwater contamination."

Comment on potential contaminated ground water: As described above in the "Comment on depth to high water table," this is demonstrably false in the Hunterdon County portion of the proposed route. Based on the typical depth to high water table and depth from ground surface to well water level, the pipeline is expected to be in direct contact with ground water through at least part of every year. In addition, this is a cursory treatment of the topic, stating only what PennEast may do if they find contaminated sites. Ground water cleanup after the fact can be ineffective. For example, in Kingwood, ground water was locally contaminated by MEL, Inc. in the 1980s. Beginning in 1990, NJDEP required MEL to remediate the site by continuously pumping the contaminated ground water from 7 on-site wells to prevent further off-site migration of salt contamination.¹¹ However, 14 years of continuous mitigation efforts have so far failed to reduce contamination in nearby wells, some of which are over

* In addition, we take issue with all 80 instances where the DEIS acknowledges PennEast's failure to submit data and reports, although it's impossible to cover them all in detail here. Without this information, and other information gaps not even acknowledged by FERC, the DEIS fails to meet NEPA requirements and should not have been prematurely submitted for public comment.

3,000 feet from the pollution source.¹² The proposed pipeline could similarly contaminate wells temporarily or permanently. Would PennEast be responsible for providing potable water for any and all impacted well owners on a temporary or permanent basis? Public water does not exist in the township and is not a viable option due to the limited and sensitive ground water resource. Therefore, the only valid action to avoid violations of the Safe Drinking Water Act and the Clean Water Act is to prevent ground water contamination from occurring, which can be ensured only by the No-Action Alternative.

DEIS pages 4-34 to 4-35: 4.3.1.8 General Impacts and Mitigation for Groundwater Resources statement: “The proposed Project would not be expected to significantly impact groundwater quality or quantity during construction or operation.”

Comment 1 on general impacts and mitigation for ground water: As stated in the paragraphs above, NO factual data is presented in the DEIS to support the conclusion that the pipeline would not significantly impact groundwater quality or quantity. In fact, the above sentence is the DEIS’ first mention of the word “quantity” in reference to ground water. The potential for the pipeline to impact well yield during and as a result of excavation and blasting and to disrupt or drain our ground water recharge areas are critically important considerations to the 100% of Kingwood residents who rely on ground water. The potential impacts on ground water of the use of huge quantities of water for hydrostatic testing and HDD drilling is not even considered in the DEIS as an issue, even though the interrelationship between ground and surface water (i.e. the water cycle) is a basic scientific concept.

Limited ground water is one of the reasons that the *New Jersey State Development and Redevelopment Plan* designated about half of Kingwood (and surrounding areas) as “Environmentally Sensitive,” declaring “**The future environmental and economic integrity of the state rests in the protection of these irreplaceable resources These resources are critically important not only for the residents of these areas, but for all New Jersey citizens** [emphasis added].”¹³

Furthermore, in a 2014 analysis of water availability, the NJ Geological and Water Survey (NJGWS) showed that the western half of Kingwood is already over allocated at Low Flow Margins[†] (LFM) $\leq 10\%$ and the eastern half is already over allocated at LFM $\leq 18\%$, while a LFM $\leq 5\%$ is actually recommended to protect the health of sensitive streams (such as C1 streams).¹⁴ Therefore, for the sustainability of our ground water resource, Kingwood has work to do to reduce its current water demands. The use of large quantities of water for construction activities and hydrostatic testing (with no discernible benefit to township landowners or residents) quite simply cannot be accommodated in our water budget.

In addition, blasting this bedrock which has locally toxic levels of arsenic >10 ppb has the potential of seriously polluting the water as well. No reasonable person can draw a conclusion on a topic that was not even previously touched on, let alone given a thorough scientific evaluation. In regards to the entire ground water topic, the DEIS provides no specific data or studies about the potential impacts of a 36” high pressure natural gas transmission pipeline in unconfined fractured bedrock aquifers. The DEIS does not even indicate that there is an understanding that we have unconfined fractured bedrock aquifers, or what that means and why this matters.

DEIS page 4-34: “The proposed pipeline installation would involve the excavation of a trench between about 7 and 10 feet deep to allow burial of the pipeline with 3 to 4 feet of cover. This depth is confined to surficial aquifers near the ground surface and would not directly impact deeper bedrock aquifers crossed by the Project, nor is it expected to significantly

[†] The amount of water available is based on the Low Flow Margin (LFM) approach. This assumes that the amount of water that the combined surface water-unconfined aquifer system can lose to depletive and consumptive water use, without experiencing unacceptable ecological impacts is a percentage of the difference between the annual 7-day stream low flow that has a 10% chance of occurring each year (7Q10) and the September median stream flow at the HUC11 outlet. This approach is fully explained by Domber and others (2013). The low flow margin approach is an outgrowth of work by Hoffman and Rancan (2009) on the hydroecological integrity assessment process.

affect groundwater discharge or recharge patterns in the deeper aquifers being recharged by precipitation in these areas."

Comment 1 on general impacts and mitigation for ground water: The reference to a "deep aquifer" is confusing, perhaps trying to describe a confined aquifer, which is not the case in the Newark subgroup. There is only one aquifer system that underlies Kingwood. Researchers such as Jean C. Lewis (USGS publication WRI 94-4147)¹⁵ found that the most productive portion of bedrock aquifers is the upper 150 feet. Dr. Robert Hordon, a Rutgers University hydrogeologist, was commissioned by the Kingwood Township Committee to study the ground water resources of Kingwood in 1995. Results of this study showed that Kingwood's well depths range from 100 to 800 feet and drawdown is high (i.e. when water is used, the well level rapidly decreases).¹⁶ The deeper wells store ground water that infiltrates into the bore hole at a slow rate. In bedrock aquifers, there are fewer and fewer fractures that can hold and transmit water the deeper one goes. As previously mentioned the aquifers underlying Kingwood are unconfined and near the surface, i.e. the opposite of the statement that the pipeline construction area and the pipeline itself would not be in contact with ground water. Since, the DEIS bases the conclusion of no impacts on ground water on the false assumption that there would be no contact between the pipeline and ground water, the conclusion itself is therefore false. NO factual data or published reports from qualified organizations is presented in the DEIS to support the conclusion that the pipeline would not significantly affect groundwater discharge or recharge patterns.

DEIS page 4-34: *"Minor temporary impacts on groundwater may include changes in percolation rates from clearing of vegetation, dewatering of the trench and bore pits, soil mixing and compaction prior to restoration, and blasting. Clearing vegetation from within the construction right-of-way would remove this natural filter layer and localized runoff may be enhanced in the disturbed areas of the right-of-way during construction activities. The reduction in infiltration rates along the right-of-way and increase in surface runoff during storm events could result in increases in localized soil erosion and sedimentation. PennEast would implement its E&SCP and our Plan and Procedures to minimize erosion potential of soils in the right-of-way, minimize the mobilization of soils on steep slopes via storm water runoff, and minimize sedimentation in waterbodies crossed by the right-of-way."*

Comment 2 on general impacts and mitigation for ground water: There are no scientific studies referenced to document that the potential ground water impacts listed would be "minor" and "temporary."

DEIS page 4-35: *"... pipeline burial would be above the groundwater table in most of the aquifers identified and would not impact groundwater discharge or recharge patterns in the deeper aquifers being recharged by precipitation in these areas. Therefore, no effect to recharge of any SSA would be expected to occur."*

Comment 3 on general impacts and mitigation for ground water: As previously mentioned, this statement is false and therefore the assumption of no potential impacts has no basis.

DEIS page 4-35: *"Trenching activity for pipeline installation would result in disturbance and redistribution of surface soils and shallow subsurface soils. This disturbance, however, would be temporary and limited to the construction right-of-way and workspace. The accumulation of water in low lying areas of the open trench, which may require dewatering of the trench, could also affect immediate surficial groundwater flow patterns."*

Comment 4 on general impacts and mitigation for ground water: FERC's characterization that the disturbance would be "temporary" is not supported by scientific studies. From personal experience, we know that construction activities can and do cause sediment (and potentially other contaminants) to enter our well water, at distances far greater than 150'. It's not uncommon in Kingwood for residents to experience dirty water when construction is occurring nearby. While ground water typically moves quite slowly, ground water in fractures can potentially move much more quickly. A contaminant could travel quickly through fractures, with little soil contact to allow for filtration or degradation of pollutants. While FERC may deem a period of 6 to 9 months "temporary," we feel that 6 to 9 months of

exposure to sediment laden well water (which could contain other contaminants as well) is not acceptable for protection of public health. Disregarding the importance of “temporary” impacts also ignores PennEast’s future plans for colocation (publicly touted by PennEast subscribers for the money-making potential) of multiple additional pipelines in its right-of-way. Repeated waves of “temporary” impacts to people’s lives, health and the environment cannot be ignored as insignificant.

DEIS page 4-35: “In the event of a natural gas leak, the gas would discharge to the atmosphere and not directly impact underlying groundwater.

Comment on natural gas (methane) leaks: In areas of wet or saturated soils, methane leaking from the pipeline could dissolve into the ground water. At the warm temperature surrounding the pipeline, the solubility of methane in water is about 17 ppm¹⁷ (solubility of methane is less in warmer water, more in cooler temperatures). Further away from the pipe, as the temperature cools to ambient ground water conditions, it is possible that methane in the water could accumulate in higher concentrations, and that the resulting methane-laden water could move through fractures into deeper rock. That water would be expected to maintain high concentrations of methane because water becomes a more effective solvent as pressure increases. Therefore, since there is a risk of methane entering the ground water and entering wells, the statement in the DEIS is demonstrably false. According to USGS, the Office of Surface Mining recommends that methane concentrations ranging from 10 to 28 ppm in water (or 3 to 5 percent by volume in air) signify an action level where the situation should be closely monitored, and if the concentration increases, the area should be vented to prevent methane gas buildup; while at concentrations of 28 ppm, methane becomes flammable in air.¹⁸

DEIS page 4-35: “In areas where blasting or rock hammering may be needed to excavate the trench to proper depth, fracturing of the bedrock may result in shallow groundwater infiltration in these areas. Blast charges would be limited to that needed to fracture rock to the required trench depth, and fracturing of bedrock would therefore be limited to within several feet of the pipeline trench.”

Comment 5 on general impacts and mitigation for ground water: First, we expect that *all or nearly all* areas of Kingwood will require blasting and rock hammering, not least the 6,000’ HDD planned for Locketong Creek, which in effect would be one *giant* blasting and rock hammering operation, so use of the word “may” is misleading. Shallow ground water is exactly what we have, as previously discussed. While it’s possible (although no references are presented to substantiate it) that impacts to the *bedrock* would be limited to within several feet of the pipeline trench, there is no evidence presented to substantiate a conclusion that there would be no impacts to our ground water quality and quantity from pipeline construction.

DEIS page 4-35, section 4.3.1.9 Conclusion: “No long-term impacts on groundwater are anticipated from construction and operation of the Project because disturbances would be temporary, erosion controls would be implemented, natural ground contours would be restored, and the right-of-way would be revegetated. Implementation of PennEast’s E&SCP, as well as our recommendations, would limit impacts on groundwater resources.”

Comment on conclusion: The DEIS provides no data or published reports from qualified persons or organizations about the potential impacts of a 36” high pressure natural gas transmission pipeline in unconfined fractured bedrock aquifers. Therefore, FERC has no basis to support the conclusion that the pipeline would not significantly affect ground water quality, quantity or flow or recharge patterns. In fact, readily available information, such as that submitted by Kingwood Township, scientists such as Prof. Onstott, and others were not incorporated or addressed. The DEIS contains discrepancies, errors, unanswered questions and data gaps.

No reasonable person could conclude that impacts to wells, septic systems or ground water during 6 to 9 months of construction should be disregarded as “temporary.”

No reasonable person would conclude that the both the construction and operation of the pipeline could not cause significant temporary and long-term impacts on ground water.

The information contained within the DEIS does not support the conclusion that the impacts of the proposed PennEast pipeline project on ground water would be negligible.

The information contained within the DEIS does not support the conclusion that all impacts could be mitigated to less-than-significant levels.

Only the no-action alternative yields a scenario where our ground water resource and public health is not at risk from pipeline impacts.

Thank you for your full consideration of Kingwood Township's comments.

Sincerely,

The Kingwood Township Environmental Commission

CC: Kingwood Township Committee
Congressman Leonard Lance
Senator Robert Menendez
Senator Cory Booker
Assemblyman John DiMaio
Assemblyman Erik Peterson
Senator Michael J. Doherty
Hunterdon County Freeholders

References

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- ¹² Kingwood Township Environmental Commission meeting minutes. November 18, 2014.
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