



Pinelands Preservation Alliance

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Protecting the Pinelands
since 1989

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August 2, 2017

Mr. Sean Earlen, Chair
Ms. Nancy Wittenberg, Executive Director
Pinelands Commission
PO Box 359
15 Springfield Road
New Lisbon, New Jersey 08064

Re: Pinelands Commission Application No. 2014-0045.001

Dear Mr. Earlen and Ms. Wittenberg,

I am submitting the following comments and associated reports and documents on behalf of the Pinelands Preservation Alliance (PPA) on the application by New Jersey Natural Gas for approval to construct a natural gas transmission line through the Pinelands. We have previously objected to the procedure that the Pinelands Commission is following after the Appellate Division remanded the matter, and we will not repeat those issues here as they are included in pending cases before the Appellate Division. Please provide the following comments, the expert reports and documents to the Commissioners and include them in the record of decision in this matter.

The proposed pipeline violates the Comprehensive Management Plan (CMP) because it is not needed and is not genuinely “associated with the function” of Joint Base McGuire-Dix-Lakehurst (JB MDL), which is required for development within the Joint Base. Further, the pipeline route runs through the statutory Preservation Area of the Pinelands, which the Pinelands Protection Act is designed to protect. The application violates the CMP’s water resource protection rules because the pipeline would risk significant adverse impacts to the natural resources within the Pinelands without demonstrated need. Approval of this pipeline would send a dangerous precedent for future implementation of the CMP.

The latest expert analysis of the New Jersey Natural Gas transmission system (Appendix A) found that the proposed pipeline is neither a necessary nor an effective solution to any reliability concerns – and that the Board of Public Utilities’ prior order waiving municipal review of the project is based on a basic misunderstanding of how the gas supply system works. It is not surprising that there were errors in the BPU process and decision since (a) neither BPU nor the Commission has ever required NJNG to conduct a rigorous, scientific flow analysis of the system and the supposed failure scenarios on which it seeks to justify the pipeline, but have instead allowed this entire development to rest on the wholly unsupported, personal judgment of

a single NJNG employee; and (b) BPU arbitrarily refused to allow PPA to be a party to its hearing, to present evidence, to propound discovery, or to cross-examine NJNG's testimony.

The BPU's order hinged on a non-specific hypothetical disruption of the Texas Eastern Transmission Company (TETCO) pipeline due to a "single point of failure" "upstream" of the NJNG connection to TETCO. TETCO is the primary, but not the only, source of gas to NJNG's system. However, due to the bidirectional nature of the TETCO supply pipeline (i.e., gas can be provided from either the west or the east of the line into NJNG's network), such a failure along the TETCO backbone would not cut off the supply to NJNG as BPU mistakenly hypothesized. In fact, there is only one possible (though highly unlikely) single point of failure scenario for the TETCO supply to NJNG – a failure along the 12 mile "Freehold Lateral" that connects the backbone to the NJNG system. Experts have identified an alternative solution, a 5-mile pipeline with interconnection stations, which would resolve any hypothetical supply disruption on the lateral. This alternative would completely avoid any risk or harm to Pinelands resources, would cost only 20% of the SRL cost, and would be 100% effective in resolving any credible failure scenario. Moreover, SRL is not even an effective measure for the unrealistic scenario BPU assumed as it could provide only 44% of the lost supply. In contrast, the alternative redundancy measure for the lateral line would provide 100% supply recovery in the event of a failure.

Throughout this process to date, the applicant and the Commission have disregarded the risks that pipeline construction and operation presents to Pinelands resources and the people who live and work along its path from the interconnection station in Chesterfield to its terminus in Manchester. PPA and others have presented expert reports, government statistics, and examples of failures that have caused harm in other, similar pipeline projects – all showing the risks are real. On the other side, NJNG has presented absolutely nothing but its assurances that everything will be fine. The Commission is bound to respect evidence, not simply accept the applicant's easy assurances in applying its regulations.

The pipeline will not meet CMP requirements for the following reasons (details on each point follow this summary).

1. This pipeline is not needed. Expert reports demonstrate that it is an ineffective response to a non-existent threat, and a feasible, more effective, less expensive alternative exists that does not risk Pinelands resources. Without need, the pipeline is in violation of the CMP's requirements for development in the Federal and Military Management Area, N.J.A.C. 7:50-5.29(a), and for linear development, N.J.A.C. 7:50-6.13.
2. Pinelands rules permit development in JB MDL only if it is "associated with the function" of JB MDL itself. See N.J.A.C. 7:50-5.29(a). In this case, the pipeline just uses JB MDL as a path from one side of the Pinelands to the other and is not genuinely associated with the function of the Base. In fact, the SRL pipeline will not connect to the Joint Base at any point, and the total demand of the Joint Base from NJNG represents less than one-half of one percent of the contracted capacity of the pipeline.
3. The pipeline route through JB MDL lies in the Preservation Area established by the Pinelands Protection Act as the most precious natural resource area (N.J.S.A. 13:18A-11a.). The pipeline would violate the CMP regulation that new development on JB MDL must be located only in the statutory Protection Area wherever feasible, and therefore not

in the Preservation Area as it is proposed to do. See N.J.A.C. 7:50-5.29(a). Since there are alternatives that would avoid the Preservation Area, the application violates this rule.

4. The pipeline fails to meet essential CMP water resource protection standards at N.J.A.C. 7:50-6.1-6.14. Specifically, 7:50-6.13, Linear improvements, specifies that to permit utility transmission lines:
 - a. Development of the facility will include all practical measures to mitigate the adverse impact on the wetland; and
 - b. The resources of the Pinelands will not be substantially impaired as a result of the facility and its development as determined exclusively based on the existence of special and unusual circumstances.

This project fails to meet these requirements for several reasons, namely, the contaminated areas through which the pipeline runs which increase the risk, the inherent risk of Horizontal Directional Drilling, and the impact to the aquifer by both construction and any leaks that occur.

5. The proposed pipeline route threatens the habitat of several listed species and violates N.J.A.C. 7:50-6.27 and 7:50-6.33-6.34.

Commissioners may wonder why NJNG would want to build a pipeline that is unneeded, ineffective and vastly more expensive than alternatives. The answer is simple: State utilities law allows gas utility to increase its profits by building and maintaining more infrastructure. Because the utility can charge its ratepayers the cost plus a percentage profit on its costs, the bigger the project the bigger the profit. This is an economic incentive built into our outdated utility laws that fully explains why a rational utility would propose such a badly conceived and unjustified development.

1. SRL Is an Ineffective Response to a Non-existent Threat, and a Feasible, Effective Alternative to Any Realistic Failure Scenario Exists Outside the Pinelands.

The Skipping Stone reports, Appendices A and B, show that the hypothetical “single point of failure” “upstream” of the TETCO connection to NJNG’s system is based on a mistaken premise that the TETCO system is one-directional, so a break at one point of its main line upstream would cut off the TETCO supply. This is incorrect, because TETCO’s supply line can and does flow in both directions, west to east and east to west, as needed. A single point of failure upstream in either direction would simply cause TETCO to supply gas from the other direction. NJNG’s own network is also highly redundant, and BPU did not rely on any need for redundancy within NJNG’s system to justify SRL. Only the short Freehold Lateral between TETCO’s backbone system and NJNG’s transmission network could conceivably be subject to a single point of failure – but BPU did not examine this point, and a vastly cheaper addition entirely outside the Pinelands would ensure that any such failure would not deprive NJNG of its TETCO supply. SRL, in contrast, could supply less than 50% of any loss of TETCO supply, making it a very expensive, ineffective white elephant.

In contrast to the expert reports and real-world examples PPA is submitting, NJNG has not conducted or supplied for examination *any* analysis of the supposed supply failures it

hypothesizes to justify SRL. NJNG has done nothing to identify specific failure locations or types, nothing to show how the TETCO and other supply lines would respond to each such failure, and nothing to examine alternatives to a long, expensive pipeline through the Pinelands to address any resulting realistic failure scenario.

Neither NJNG nor the BPU conducted reliability or flow analyses to demonstrate that this pipeline is necessary and effective. Craig Lynch, Senior Vice President of Energy Delivery for New Jersey Natural Gas, conceded during the BPU evidentiary hearing on December 7, 2015, that NJNG did not conduct an independent analysis showing that SRL would improve reliability, but relies solely on the “opinion” of one employee:

Q. Mr. Lynch, NJNG could not provide an independent analysis or verification showing that the SRL will improve reliability to its customers. Correct?

Mr. Lynch: Correct

Q. To provide reliability, NJNG relies on your opinion and experience as one of the Company’s senior executives?

Mr. Lynch: Correct.

(BPU Hearing Transcript, Docket No. G015040403, December 7, 2015, p. 57.) NJNG has admitted that it has not suffered a full system interruption due to any of the threats (like Superstorm Sandy) it postulates, nor has it modeled a system interruption or even prepared a curtailment plan to ration supplies in the case of an emergency.

A holistic analysis would look at resolving any potential for a major supply loss. The BPU defines a disruption as 50% or greater supply loss. The Skipping Stone analysis demonstrates that a failure at any point along the TETCO mainline would not come close to meeting this threshold; in fact, NJNG would be able to receive 96% to 100% of its contracted supplies because of TETCO’s existing reliability. This is largely due to the existing bidirectionality of the gas delivery.

The Skipping Stone report sets out an alternative to the SRL referred to as the “Freehold Back-Up Reliability Solution” (FBURS). FBURS lies entirely outside the Pinelands and would cost only 20% of the cost to construct the SRL. It would only require NJNG to install 5.4 miles of 24” line from an area where the TETCO mainline crosses the Transco mainline to the terminus of the Freehold Lateral and associated interconnections. Unlike SRL, the route would duplicate the TETCO Lateral’s function between the Transco mainline and the NJNG service area. This would extend the NJNG system to the Transco-TETCO Lateral crossing point.

The Skipping Stone report (in sharp contrast to anything NJNG has produced) provides detailed analyses of failure scenarios that would be alleviated by FBURS and which would provide far more effective natural gas redundancy than the SRL. See Appendix A, pp. 20-22. The Commission should also note that “FBURS traverses existing Rights of Way without any of the additional community and Pinelands Area impacts attendant to the SRL Single Point of Failure ‘solution’ adopted by NJNG.” Appendix A, at p. 23.

These facts about the supply system provide a key basis on which the Commission should find that SRL does not meet CMP requirements detailed below.

2. The Pipeline Is Not “Associated with the Function” of the Joint Base

Pinelands rules permit development in JB MDL only if it is “associated with the function” of JB MDL itself. See N.J.A.C. 7:50-5.29(a). In this case, the pipeline just uses JB MDL as a path from one side of the Pinelands to the other and is not genuinely associated with the function of the Base. The pipeline is not specifically designed to serve or even capable of serving JB MDL needs.

The pipeline does not connect to any JB MDL facility along its path. NJNG only serves the Lakehurst section of the Base, while PSE&G serves the majority of the base’s needs. The Lakehurst section of JB MDL is just one out of hundreds of thousands of NJNG customers, and it uses only a miniscule proportion of the gas NJNG distributes through the network of which the Lakehurst Section is a part. The Air Force has identified the annual gas usage for the Lakehurst section of JB MDL as 246.481 MMcf (Appendix G).¹ This represents less than four-tenths of one percent of the pipeline’s capacity of more than 180,000 dth/d.² A development that was genuinely associated with the Base would not be designed to carry **more than 200 times the volume of gas the Base could possibly use.**

The Air Force itself recognizes that the pipeline is not associated with the Joint Base’s military mission, as the lease the parties propose to enter is based on a commercial fair market value with no other mission-related benefit to the Joint Base. Simply earning commercial revenue cannot count as a development “associated with the function” of the Base, or this provision of the CMP would be completely meaningless.

The Air Force, moreover, has already determined that existing natural gas supplies to JB MDL are adequate to meet its needs. In 2012, the Air Force completed an Installation Development Plan to guide and focus the development of JB MDL for the next 25 years – until 2037.³ In this plan, the Air Force assessed existing capacities of utilities including natural gas. New Jersey Natural Gas only provides gas to the Lakehurst Section of JB MDL. The Air Force states that the natural gas systems of all three sections of the Base are “considered adequate” and that “supply capacity is not considered an issue for future growth” (see Appendix H)⁴ This demonstrates not only that the existing supply is adequate for current activities, but will be able to provide for expansion on the base as needed. Neither JB MDL nor NJNG has conducted analysis to determine whether a redundant gas service infrastructure is needed for JB MDL, and there are no plans to create such a redundant service to the great majority of the Base in its McGuire and Dix sections.⁵

New Jersey Natural Gas has repeatedly stated in its regulatory submissions and discovery documents that the pipeline will have no connection to any facility on the Base along its path. As New Jersey Natural Gas has stated in discovery filings (Appendix I), “no tariff customers are served directly from the Company’s intrastate transmission systems. JB MDL will benefit from the reliability of the SRL like all of the Company’s tariffed customers in the Company’s Central and Ocean Divisions.”⁶ This is in line with NJNG’s plans, which do not include any interconnection stations. An interconnection station would be required to connect a distribution line to the larger transmission line. NJNG also does not have any intention to change the system,

as they have stated: “there are no changes or additions planned to the SRL in the first five years of operation.”⁷ Relevant discovery filings are available in Appendix I.

No one has demonstrated that the SRL would provide substantial benefit to JB MDL. The letter on which some proponents of the pipeline rely shows how misleading the justifications it provides for the pipeline really are. In the letter, Colonel Frederick D. Thaden wrote about the pipeline:

The project provides a primary benefit of natural gas supply redundancy gained by looping the delivery pipeline, in addition to potentially converting facilities from liquid energy sources to gas. The current proposed route **will provide direct service to the installation whereas, under the current state, JB MDL is near the terminus of the existing pipeline.** The majority of the gas consumed by the installation will flow via the new pipeline, if completed.

This description of and justification for the pipeline is simply incorrect, because in fact the pipeline will **not** “provide direct service to the installation.” It is clear Col. Thaden had been misinformed on the core point of his letter.

NJNG only services one-third of JB MDL, with PSEG serving both Fort Dix and McGuire. Yet there are no plans to have PSE&G build new pipelines to create a redundant supply to the great majority of the Base. These facts show that the asserted connection to the Base is simply a cover to build a pipeline that is motivated by other, economic considerations independent of the Base.

The lack of genuine association between the pipeline and the function of the Base is further evidenced by the timing of NJNG’s contact with JB MDL officials and emails between officials at the company and at the base. After meeting with the Pinelands Commission, NJNG approached JB MDL via email, as follows:

Subject: Proposed Pipeline route thru the Joint Base McGuire-Dix-Lakehurst

We met with the Pinelands Commission last week for an initial review [of] our pipeline proposal. They agreed with us that the southern route would be the best option but there were still issues with a section along Route 70 where we need to past [sic] through a section of Forest Preservation area that would make the approval process more cumbersome. They suggested that we approach you to see if we could reroute the line through your base and come out the back end of our project. They believe that this new route along with a letter from the base that the presence of the pipeline would be a positive attribute to future base activities could streamline the process.

NJNG routed the line through the Base simply to streamline the application process, and requested a letter from the base to corroborate this decision. However, this letter did not indicate that the Joint Base actually has a use for the gas, as evidenced by the following email, also sent from NJNG to an official at JB MDL:

I am putting together wording for section 9 of the Pinelands permit. It involves the base gas use issues. It requires a description of why our project conforms to the Pinelands regulations for utility use. I intend to discuss the reliability side of the project from a

system viewpoint. I also would like to talk about how we can directly impact the Joint Base's system. There seem to be two ways to address the issue.

The first is to identify a specific set of buildings that will have gas brought to them. Any luck on identifying additional buildings that need to be serviced? Having a specific plan would be better than vague statements. Let me know if there is anything I can do or if you want me to meet with [redacted] .

The second way is to identify a future site for a possible station to reinforce the existing system as well as start a new system west of 539. I could install the necessary valves to accomplish our goal and identify it for future installation under a separate application.

I believe one of the above items must be identified and included in our description of the base. We should meet to talk about a plan of action. This issue needs to get settled so the application can get submitted. Let me know what you think. Thanks.

Additionally, the CEO of New Jersey Natural Resources has indicated to shareholders that the pipeline is designed to service growth in Ocean County, not merely serve existing customers (Appendix N). These statements directly contradict the justification NJNG provides in its application.

Routing the pipeline through JB MDL also increases the risk to the pipeline of failures, leaks, and explosions, which would weaken the base's ability to carry out its operations. These conditions, which NJNG has wholly failed to evaluate, include at least the following:

- The stress caused by the takeoff and landing of jet aircraft along the portion of the route that lies directly at the edge of a jet taxiway and the stress caused by heavy road usage by vehicles, including heavy-duty military vehicles. This type of usage results in an increased external load, which stresses the pipeline. Regular usage by trucks, machinery, and jets results in a much larger live load than would be necessary along a highway shoulder or right of way. Pipelines and Hazardous Materials Safety Administration (PHMSA) data compiled by the National Transportation Safety Board (Table 1) demonstrate that equipment actions are a top cause of gas transmission pipeline incidents. Other outside forces, such as large external loads, are also a substantial contributor to pipeline failures.
- The routing of the pipeline in highly acidic groundwater and acidic soil. Groundwater within the Kirkwood-Cohansey aquifer system has a median pH of 5.1 with decreasing pH from the coast to the western edge of the Kirkwood-Cohansey Aquifer.⁸ The soil is also quite acidic; average pH of soil within the Pine Barrens is 4.0.⁹ Low pH is correlated with an increased risk of external pipeline corrosion and failure.^{10,11,12} An assessment of the Kirkwood-Cohansey aquifer found that the area where the pipeline would travel is highly corrosive based on the Aggressive Index, which relies on pH, alkalinity, and calcium hardness, as established by the American Water Works Association.¹³ A review of the available PHMSA data from 2010 to 2015 indicates that corrosion is the most frequent cause of significant incidents and one of the most common causes of all incidents (Table 1).

- The groundwater in which the pipeline will sit may contain toxic chemicals due to soil and water contamination at JB MDL. This includes volatile organic compounds, petroleum hydrocarbons, and perflouronated compounds. While these contaminants themselves are not known to pose corrosion risks, their presence is due to release of specific materials, such as firefighting foam, which carry with them ions that reduce the resistivity of soils, particularly those, like in the Pine Barrens, that are prone to infiltration due to their porous nature. The reduction in resistivity makes the pipeline more suitable to corrosion.¹⁴ Once again, the application completely ignores this risk.

Table 1: Causes of pipeline incidents as reported to the PHMSA, 2010-2015

Cause	Significant Incidents	All Incidents	Percentage of Significant Incidents	Percentage of All Incidents
Corrosion	147	172	0.29	0.22
Material Failure	80	98	0.16	0.12
Equipment	93	212	0.19	0.27
Excavation	64	106	0.13	0.13
Operations	22	37	0.04	0.047
Natural Forces	36	62	0.072	0.078
Other Outside Forces	32	51	0.064	0.064
Other	28	52	0.056	0.066
Total	502	792		

The Pinelands Commission must require or conduct a thorough assessment of the geology and geochemistry to determine the additional risk factors JB MDL and the Pinelands pose to the pipeline, particularly the issues of external corrosion and loading.

3. The Pipeline Violates the CMP Rule that New Development on JB MDL Must Be Located only in the Pinelands *Protection Area* Wherever Feasible and *Not* in the *Preservation Area* as Proposed.

The pipeline route through JB MDL lies in the Pinelands Preservation Area established by the federal and state statutes as the most precious natural resource area (N.J.S.A. 13:18A-11a.). A route outside the Preservation Area is indeed possible. For example, the alternative

proposed by Skipping Stone runs only 5 miles, completely outside of the Pinelands. This alternative provides a greater reliability service than the SRL, as described above and in more detail in the attached report. NJNG's so-called alternatives analysis irrationally takes the start and end points of the pipeline as givens, and only discusses alternative routes between those points. Even then, its analysis is riddled with arbitrary, unverified assumptions that invalidate its very narrow results.

The Pinelands Protection Act explains the goals of the Preservation area, including the following, at N.J.S.A. 13:18A-9c:

- (1) Preserve an extensive and contiguous area of land in its natural state, thereby insuring the continuation of a pinelands environment which contains the unique and significant ecological and other resources representative of the pinelands area;
- (3) Prohibit any construction or development which is incompatible with the preservation of this unique area.

Permitting a high-pressure natural gas transmission line through a portion of the Preservation area is clearly not preserving it in its natural state. As described in more detail below, the construction and operation of the pipeline directly threatens the ecosystem and aquifer, making this development incompatible with the preservation of the area.

The CMP rules for construction in the Federal and Military Management Area require that, among other things, any such development must be located in the Protection Area, defined by the Pinelands Protection Act, and therefore not in the statutory Preservation Area, wherever feasible. Given that there is no necessity that the pipeline, whatever its start and end points, run through the Preservation Area, the SRL cannot meet this requirement. N.J.A.C. 7:50-5.29(a)

4. The Pipeline Violates CMP Wetlands and Water Resource Protection Rules.

The pipeline development violates CMP wetlands rules and poses risks to water resources which the applicant has failed to quantify or address.

a. The Pipeline Violates Wetlands Protection Standards for Linear Development

The CMP, 7:50-6.13, Linear improvements, specifies that any utility transmission line routed through wetland resources must meet the following standards:

1. There is no feasible alternative route for the facility that does not involve development in a wetland, or, if none, that another feasible route which results in less significant adverse impacts on wetlands does not exist;
2. The need for the proposed linear improvement cannot be met by existing facilities or modification thereof;
3. The use represents a need which overrides the importance of protecting the wetland.

In the present case, NJNG has not met these standards either with respect to the specific route through the Pinelands it has chosen or even with respect to demonstrating any need for the pipeline at all. As shown above and in the expert reports PPA is submitting with these

comments, SRL is a solution to a risk that does not exist, SRL is a very ineffective solution even to the unrealistic scenario on which it is based, and alternatives outside the Pinelands would provide a fully effective solution to the only possible single point of failure scenario that could cut the current TETCO supply.

b. This pipeline is running through contaminated areas within and immediately surrounding JB MDL, which raises further environmental concerns.

SRL would be embedded in the Kirkwood-Cohansey aquifer, but NJNG failed to conduct any studies of the specific soil contamination, groundwater contamination, geology and water level along the proposed pipeline route.

The document that comes closest to addressing these issues is the Draft Environmental Assessment (EA) compiled by the Air Force at JB MDL. However, the draft Environmental Assessment relies on *limited, pre-existing* studies of just the Superfund sites along the route, while erroneously assuming, without evidence, that the pipe will not be embedded in the groundwater. Even for the Superfund sites, the draft EA failed to cite any current data on the presence or concentrations of contaminants in the shallow and middle levels, relying instead on vague references to out-of-date and inconsistent well tests. The methodology used by the JB to measure concentrations of contaminants in the Superfund sites the proposed pipeline would cross was specific to monitoring contaminant plume migration in the water table over time under conditions of natural attenuation. This monitoring effort is not adequate to assess plume migration under instances of soil or groundwater disturbances associated with pipeline construction. The failure to conduct a specific, current and targeted evaluation of these issues along the proposed construction route is frankly incredible given the magnitude of such a development, to say nothing of the risks that a failure during construction or operation of such a pipeline presents to the Base's mission, personnel and natural resources.

The Air Force now recognizes that there are widespread contamination plumes in soil and groundwater on and flowing out of JB MDL, in addition to the existing Superfund sites. However, NJNG has provided no discussion, much less an analysis, of how the construction of the pipeline could affect the mobilization and movement of such contaminants in the shallow ground water and associated surface waters. For example, it simply ignores the issue of the perfluorinated compounds (PFCs) perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in surface and ground waters, despite the fact that they are ubiquitous throughout JB MDL. A collection of reports and news articles concerning this contamination is provided in Appendix O.

Recently, 160 groundwater samples and 30 surface water samples were collected across JB MDL from 21 sites. The sampling was part of a base-wide site inspection for PFCs. PFOS and PFOA are not regulated under the Safe Drinking Water Act, but the U.S. Environmental Protection Agency has issued health advisory levels (HAs) for these chemicals in 2016. The advisory level is 70 parts per trillion (ppt) for PFOA and PFOS, individually or combined. The New Jersey Department of Environmental Protection (NJDEP) has a guideline of 40 ppt for PFOA. The results of the base-wide study revealed exceedances of the EPA HA for PFOS and/or PFOA at each of the 21 sites.

Pipeline excavation will occur contiguous with Area C. Within this area is the former NATTC (Fire Training Area AT016). This area is also known as PFC Area 18. Groundwater sampling conducted during August 2016 revealed that groundwater in the area of the proposed pipeline excavation contained combined concentrations of PFOA/PFOS of 18,100 ppt and 13,900 ppt respectively in two groundwater well samples within the area. As a result, pipeline excavation within the water table will undoubtedly contact and affect the movement of PFOA/PFOS – a predictable result the development must avoid, but which is simply ignored by the EA and the other documents available to the Commission. Remedial action plans for area C and area I/J are available in Appendices J, K, and L.

The failure to conduct any specific evaluation of soil and water contamination along the pipeline route means that the Environmental Assessment's claim that the pipeline route will not touch any contamination issues is unjustified and unreliable.

c. The Application Does Not Account for or Address the Well-Established Risks Horizontal Directional Drilling (HDD) Poses to the Aquifer.

There are over 20 stream and wetland crossings within the Pinelands portion of this pipeline where HDD is proposed. While HDD prevents direct interference with surface water resources, it is certainly not without risk. As Rubin details in his report, submitted with these comments (Appendix D), the most frequent incident occurring during HDD is inadvertent returns of drilling fluids to the surface water. This causes direct contamination of the surface water and may impact groundwater depending on the location of the pipe. There is a particularly high risk of inadvertent releases in shallow, granular soil conditions along which the pipeline travels. Additionally, there is documented heterogeneity in subsurface Pinelands geology that cannot be determined without extensive surveying.¹⁵ Without knowledge of the conditions in which HDD will take place, the risk of inadvertent returns rises. Additionally, once the HDD segments are operational, monitoring and/or excavation if needed is made much more difficult.

Without knowing the precise geology and hydrology of the pipeline route, it is also impossible to assume that the pipeline will not alter the movement of water in the aquifer or pierce local confining layers that sustain surface waters. This issue is more fully discussed below.

Only by studying the specific hydrogeology of the proposed route can the impacts of the pipeline be predicted. The failure to do so in this case makes it impossible to demonstrate that the risks are acceptable.

Recently and nearby, HDD has caused environmental damage and destruction to wells along pipeline routes. For instance, on Wednesday, May 10, the Federal Energy Regulatory Commission (FERC) ordered Energy Transfer Partners to suspend future horizontal directional drilling (HDD) work on their Rover Pipeline while a third party investigation is conducted on a major spill in Ohio. The HDD release caused a spill of approximately 2 million gallons of bentonite-based drilling fluid into a state-designated wetland. For a period of almost three weeks, there were absent or intermittent returns of drilling mud, raising "serious concerns regarding the magnitude of the incident..., its environmental impacts, the lack of clarity regarding the underlying reasons for its occurrence; and the possibility of future problems" according to the correspondence from FERC.

Even closer, Sunoco has been constructing the Mariner 2 East pipeline, a 20" diameter natural gas pipeline in Pennsylvania. Between April 25 and June 17, 2017, construction has caused at least 61 drilling mud spills ranging from five gallons to tens of thousands of gallons. As a result of one of these spills in Chester County, PA, fifteen families could no longer use their wells and must be transferred to an alternate water supply.¹⁶ Information about these and more HDD incidents is available in Appendix P.

d. The Pipeline Would Be Within the Water Table for All or Most of Its Length in the Pinelands.

The application underestimates environmental impacts from trench dewatering on nearby wetlands, mobilization of known ground water contaminants, disposal of contaminated groundwater and post-construction dewatering of wetlands from pipeline construction.

Available data indicate that the pipeline, even in situations where HDD will not take place, may sit within the water table. For example, based on groundwater levels obtained during February 1992 for Areas I & J within JB MDL, the depth to groundwater along Boundary Road ranged from one foot below ground surface (bgs) to 6.5 feet bgs.¹⁷ Similarly, groundwater levels obtained during February 1997 also indicated that along Boundary Road the depth to groundwater was encountered at depths just below the ground surface.¹⁸

Similar findings were noted for Area C within JB MDL. Water level measurements obtained during December 1991 also indicated that along Boundary Road groundwater was encountered at depths ranging from 1 to 5 feet bgs.¹⁹

Within the area of JB MDL and Boundary Road, the shallow Kirkwood-Cohansey aquifer provides approximately 90 percent of the baseflow to area streams and wetlands.²⁰ Wetlands and streams in the area are therefore the surface expression of the shallow groundwater table. Boundary Road is flanked by vast areas of wetlands and streams. Along Boundary Road between Route 539 to the where the proposed pipeline exits JB MDL property to the east, over 8,100 feet of wetlands are contiguous with the road. It is therefore, logical that pipe trench excavations will encounter groundwater. The following must be considered given the high groundwater table:

- **Potential Impacts to Wetlands from Trench Dewatering** - Given the high groundwater table along Boundary Road and the neighboring areas, a dewatering assessment of the specific proposed route must be conducted. Without an assessment, potential impacts to nearby wetlands from dewatering will remain unknown. This could result in a violation of the New Jersey Freshwater Wetlands Protection Act (and therefore the federal Clean Water Act) and the Pinelands Protection Act and its federal authority in the National Parks and Recreation Act of 1978.
- **Potential Mobilization of Known Groundwater Contamination** - A dewatering analysis also needs to be conducted to determine if dewatering will increase the vertical hydraulic gradient in area of known groundwater contamination. Dewatering can alter flow not only in a horizontal direction, but vertically as well. Particularly in Area I & J for volatile organic compounds, and in Area C for PFOA's.

- **Effects of Altering Subsurface Geology and Hydrology** – In the Pinelands, subsurface geology typically consists of a mosaic of sands, gravels and clay formations. The specific subsurface geology of each area determines the movement of water within the aquifer and in surface waters, which are hydrologically connected to the aquifer. Clay formations, for example, play a key role in creating and sustaining wetlands. HDD construction may pierce and thereby alter the subsurface geology, so altering the local hydrology above and below the surface. Without knowing the specific geology and hydrology along the pipeline route, it is impossible for the Commission justifiably to assume the pipeline would have no substantial impact on streams, wetlands and associated habitats.
- **Post-Construction Dewatering** - It is anticipated that the bottom of the pipeline will be a minimum of 7-feet below ground surface. There is a real concern that construction activities within the groundwater table around the pipeline will result in higher permeability preferential flow paths around the pipeline. This could result in the pipeline backfill acting as a dewatering system lowering groundwater onsite and near wetlands by sending groundwater offsite. This scenario would *permanently* result in less water being available for the wetlands and stream baseflow. This risk needs to be addressed.
 - e. **The application does not address the risks of pipeline leaks to natural resources and the people and facilities along the route.**

The risks of pipeline leaks are illustrated by the record of natural gas transmission pipeline accidents kept by the federal Pipeline and Hazardous Materials Safety Administration and pipeline accident briefs from the National Transportation Safety Board. Such risks include leaks of liquid methane and methane gas as well as ruptures and explosions. The rate of such incidents has increased over roughly the past two decades, as indicated by an analysis of the available PHMSA data from 1997 to 2015.

An analysis of only significant incidents demonstrates a similar increase over the study period. This controls for reporting, as these incidents are those required to be reported. (Significant Incidents include any incidents in which there is a fatality, in-patient hospitalization, \$50,000 or more in total costs (1984 USD), release of 5 barrels of highly volatile liquid releases or other liquid releases of 50 barrels or more, or liquid releases resulting in an unintentional fire or explosion.) The data are normally distributed (Shapiro-Wilk, $n=19$, $p = .325$), and show a slight positive trend (Coefficient = .0054, $p < .0005$). Even controlling for expansion of onshore transmission pipelines, the significant incident rate has increased over just the past twenty years. This adds to findings in other analyses and reports.²¹

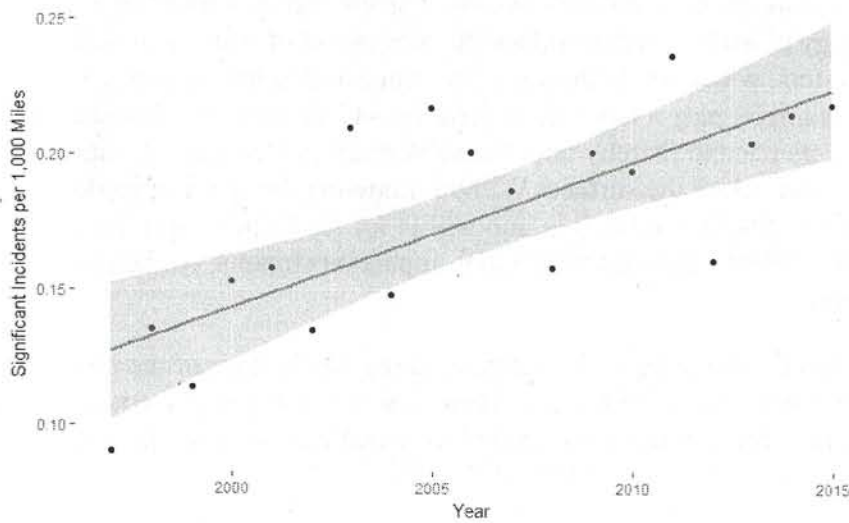


Fig. 1: Onshore gas transmission pipelines significant incident rate 1997 through 2015. Data for pipeline mileage and significant incidents per year from PHMSA. Trend line is a linear regression model with coefficient .0054, $p < .0005$.

Data on the fatalities, injuries, and cost in 2016 U.S. dollars from significant incidents along onshore gas transmission lines is available in Table 1. Paul Rubin provides a more detailed analysis on the impact a pipeline failure could have on JB MDL and the surrounding area (appendix C). Specifically, analysis by Sklavounos and Rigas calculates a minimum safety distance of 800 meters based on jet fire scenarios for a pipeline of this size and pressure. As it stands, the pipeline route could put thousands of employees and residents at JB MDL and residents of the Pinelands at risk in the event of a catastrophic pipeline failure. The data indicate that pipeline safety cannot be simply glossed over.

Table 1: Summary of significant incidents along onshore gas transmission pipelines within the United States as reported to the PHMSA

Year	Significant Incidents	Fatalities	Injuries	Cost (2016 USD)
1997	26	1	5	12,895,038
1998	40	1	11	46,767,171
1999	33	2	8	20,062,791
2000	45	15	16	19,681,683
2001	45	2	5	15,104,246
2002	40	1	4	18,174,586
2003	62	1	8	49,621,353

2004	44	0	2	8,790,883
2005	64	0	5	221,009,148
2006	59	3	3	28,743,581
2007	55	2	7	35,718,360
2008	47	0	5	118,709,035
2009	60	0	11	44,558,043
2010	58	10	61	638,248,044
2011	71	0	1	114,181,315
2012	48	0	7	49,394,093
2013	61	0	2	44,862,432
2014	64	1	1	42,435,963
2015	65	6	14	48,944,400

In addition to the direct safety risks the pipeline poses to those living and working along the route, data collected on methane leaks indicate that the pipeline poses a significant risk to the shallow Kirkwood-Cohansey aquifer. As laid out above, the pipeline sits within the aquifer not only within the Horizontal Directional Drilling sections of the pipeline, but within many stretches of the trench excavation in which the water table is sufficiently shallow.

From 2010 to 2015, the PHMSA reports 50 recorded incidents of liquid methane leakage from gas transmission pipelines. Even within so-called dry natural gas pipelines, it is common for liquid condensates of hydrocarbons to form, creating the possibility of leakage. Liquid methane leakage is particularly dangerous given its ability to immediately impact the aquifer.²² The EA completely fails to address this leakage scenario.

Gas leakage is extremely common among gas transmission lines. Methane emissions from the transmission and storage sector account for 34% of the non-combustion greenhouse gases released as part of the natural gas industry.²³ Of the 792 gas transmission pipeline incidents (both onshore and offshore) reported from 2010 to 2015 to PHMSA, 747 of them included an unintentional release of natural gas.

A pipeline failure along the base would cause direct harm to the aquifer, as demonstrated by Coppola's analyses of methane transport and impact on groundwater. This is a significant risk even when the pipeline is situated above the water table, as downward and lateral migration of the gas is likely under situations similar to that of the Pine Barrens. Increased levels of methane in ground and surface pose a danger to aquatic organisms and are poorly studied with regard to human health.²⁴

5. The Pipeline Route Threatens the Habitat of Several Listed Species and Violates N.J.A.C. 7:50-6.27 and 7:50-6.33-6.34.

The current route violates N.J.A.C. 7:50-6.27, which specifies that no development may take place unless it avoids irreversible adverse impacts to the survival of any local populations of threatened or endangered plants.

Sickle-leaf Golden-aster (*Pityopsis falcata*; S3), a species specifically identified for protections by the Pinelands Commission, was identified in several locations along the proposed pipeline, with one occurrence partially located on a proposed “lay down” area. The Threatened and Endangered Species Habitat Assessment Report was inconsistent in its description of this population by stating first that “each plant cluster and/or individual plant was identified,” then later referring to the population as an estimate and offering an approximate number of individuals. In order to assess the potential impact of a “lay down” area to this population, the report must differentiate between a plant cluster and individual, how and when these determinations were made, and the methodology used to estimate the population. The report identifies that approximately 456 plants are located within the “lay down area.” This constitutes approximately 9% of the estimated population which is below the 10% threshold of impact identified in the report. Without clarity on the methods used in the population estimate, or a measure of sampling or extrapolation error, it cannot be concluded that less than 10% of the population will be impacted by construction or that 10% constitutes an acceptable percentage of population loss for this rare species. The description of the methods used in the assessment lack the detail needed in order to allow for replication and the lack of statistical analysis renders the assessment of impact to the population as meritless.

Following the population estimate, the Threatened and Endangered Species Habitat Assessment Report states, “Based on information provided by AECOM, disturbance to the laydown area is temporary and will not result in permanent disturbance.” Based on the unique chemistry, nutrient profile and importance of intact soil strata in Pinelands soils, disturbance in terms of soil chemistry and nutrients is likely to be long-lasting, which would negatively impact the remaining plants of this population and limit their ability to recolonize areas lost during construction. Furthermore, the report states that the use of matting “will ensure there is no permanent disturbance to the soil that is currently the source of the sickle-leaved golden aster seed bank. After the project is complete and the matting is removed, the seed bank will remain, as well as the plants, for re-growth during the next growing season.” The report, however, provides no authority or basis for this assumption. In order to function under the assumption that a seed bank will become activated following construction and will begin the process of repopulating that area with Sickle-leaf Golden-aster, the report must provide citations that focus on the seed banking capabilities of this species and conditions suitable for repopulation.

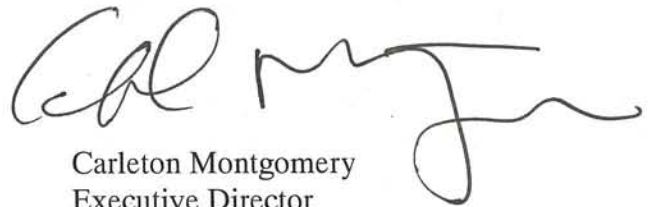
Surveys for the federally listed Knieskern’s Beaked-rush (*Rhynchospora knieskernii*; S2) concluded in the month of August. As established by the US Fish and Wildlife Service, however, mature fruit is needed to identify this otherwise inconspicuous species, requiring that surveys be conducted through September. The report’s finding on this point, therefore, is unreliable and invalid.

The pipeline also endangers threatened wildlife, in violation of N.J.A.C. 7:50-6.33-6.34. The Threatened and Endangered Species Habitat Assessment Report identified a Pine snake

(*Pituophis melanoleucus*; State Threatened) nest within 100 feet of a proposed “lay down area”. Timing for the use of this lay down area must exclude the nesting season and neonate dispersal from June through November. Neonates emerging in September will be present above ground until their first shed, then begin dispersing in the vicinity in search of a winter hibernacula. Active use of the lay down area during this time frame will put either the nest or emerging snakes in jeopardy. The report offers no meaningful discussion of the life history traits of this species or any discussion of the local population or known nests across the landscape, all of which would be necessary to assess no adverse impacts to this species. Because of the potential impacts to a known nesting location of a threatened species, the proposed “lay down area” should be relocated.

As our comments and attached reports clearly demonstrate, this pipeline is not needed, not genuinely associated with the function of JB MDL, ineffective at resolving realistic reliability concerns for NJNG’s system, and threatens rare species within the Pinelands. As such, it is imperative that the Pinelands Commission uphold the CMP and reject this application.

Sincerely,



Carleton Montgomery
Executive Director

¹ EHS Technologies for United States Air Force, 2013, *Environmental Assessment, Communications-Electronics Research, Development and Engineering Command (CERDEC) Flight Activity Facility at the Joint Base McGuire-Dix-Lakehurst, New Jersey*.

² NJNG Petition to New Jersey Board of Public Utilities.

³ United States Air Force, Installation Development Plan Commander’s summary, 2012.

⁴ United States Air Force, 2014, *Final Environmental Assessment of Installation Development at Joint Base McGuire-Dix-Lakehurst, New Jersey*.

⁵ NJNG Discovery Document 01-08-16.

⁶ NJNG Discovery Document 01-08-16.

⁷ Ibid.

⁸ U.S. Geological Survey, 1993, *Corrosiveness of Ground Water in the Kirkwood-Cohansey Aquifer System of the New Jersey Coastal Plain*, <https://pubs.usgs.gov/wri/1990/4180/report.pdf>.

⁹ National Conservation Training Center, Fish and Wildlife Service, *Significant Habitats and Habitat Complexes of the New York Bight Watershed*, https://nctc.fws.gov/pubs5/web_link/text/nj_pine.htm.

¹⁰ Gleeson, 1941, Fundamentals of Corrosion, *American Water Works Association*, 33(7): 1249-1262, http://www.jstor.org/stable/41232708?seq=1#page_scan_tab_contents.

¹¹ Shehata, Elboujdaini, and Revie, 2008, Initiation of Stress Corrosion Cracking and Hydrogen-Induced Cracking in Oil and Gas Line-pipe Steels in *Safety, Reliability and Risks associated with Water, Oil and*

Gas Pipelines, eds. G. Pluvinage and M.H. Elwany, 115-129,
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- ¹² De Waard and Milliams, 1975, Carbonic Acid Corrosion of Steel, *Corrosion*, 31(5): 177-181,
<http://www.corrosionjournal.org/doi/abs/10.5006/0010-9312-31.5.177?code=nace-prem-site>.
- ¹³ U.S. Geological Survey, 1993, *Corrosiveness of Ground Water in the Kirkwood-Cohansey Aquifer System of the New Jersey Coastal Plain*.
- ¹⁴ Doyle and Grabinsky 2003, Applying GIS to a Water Main Corrosion Study, *American Water Works Association*, 95(5): 90-104, <https://www.awwa.org/publications/journal-awwa/abstract/articleid/14799.aspx>.
- ¹⁵ Rubin, January 24, 2017, *Environmental and Geotechnical Considerations Regarding the Proposed South Jersey Gas Natural Gas Pipeline Crossing through the Pinelands of New Jersey*.
- ¹⁶ <https://stateimpact.npr.org/pennsylvania/2017/07/19/mariner-east-2-construction-has-resulted-in-dozens-of-spills-documents-show/>
- ¹⁷ Naval Air Warfare Center, July 8, 1993, *Proposed Plan, Remedial Action Areas I & J Groundwater*.
- ¹⁸ Naval Air Engineering Station, June 11, 1999, *Final Proposed Plan for Areas I & J Groundwater*.
- ¹⁹ Naval Air Engineering Station, August 16, 1995, *Proposed Plan Area C Soil & Groundwater*.
- ²⁰ United States Geological Survey, 1997, Robert S. Nicholson & Watt, *Simulation of Ground-Water Flow in the Unconfined Aquifer System of the Toms River, Metedeconk River and Kettle Creek Basing, New Jersey*, <https://pubs.usgs.gov/wri/1997/4066/report.pdf>.
- ²¹ National Transportation Safety Board, January 27, 2015, *Integrity Management of Gas Transmission Pipelines in High Consequence Areas*, <https://www.nts.gov/safety/safety-studies/Documents/SS1501.pdf>.
- ²² Rubin, January 24, 2017, *Environmental and Geotechnical Considerations Regarding the Proposed South Jersey Gas Natural Gas Pipeline Crossing through the Pinelands of New Jersey*.
- ²³ United States Environmental Protection Agency, April 15, 2015, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2013>.
- ²⁴ Coppola, October 17, 2015, *The Risks to Waters within the Pinelands from the Proposed South Jersey Gas Natural Pipeline*.