



## State of New Jersey

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

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**VIA ELECTRONIC MAIL**

September 4, 2020

Craig A. Lynch  
New Jersey Natural Gas  
P O Box 1468  
1415 Wyckoff Rd.  
Wall, NJ 07719

Suspension Letter - Freshwater Wetlands General Permit #2  
File and Activity No.: 0000-15-0007.1 FWW150001  
Applicant: New Jersey Natural Gas  
Project: NJNG Southern Reliability Link (SRL)  
Block(s) and Lot(s): [204, 4] [403, 10.02] [500, 1.01] [502, 15.01] [502, 16.02] [502, 9]  
[201, 22] [500, 9.05] [53, 10] [53, 11] [23601, 1] [200, 1] [200, 2] [70, 18] [72.01, 14.03]  
[76, 83.01] [80, 4]  
Municipality: Chesterfield Twp. North Hanover Twp., Burlington County  
Plumsted Twp., Jackson Twp., Manchester Twp., Ocean County  
Upper Freehold Twp., Monmouth County

Dear Mr. Lynch:

This letter is in response to the written strategy, dated August 6, 2020, submitted by New Jersey Natural Gas (NJNG) in response to the Department's suspension of a Freshwater Wetlands General Permit #2 and notice of non-compliance with a Flood Hazard Area Permit-by-Rule #36 on July 8, 2020. The Department also acknowledges that the information was also submitted to satisfy the requirements of the two Notices of Violation (NOVs) issued by the Department on June 25, 2020. Based on a review of the written strategy and pursuant to N.J.A.C. 7:7A-20.8(e)2, the Department has determined that additional information is required to evaluate the sufficiency of the proposed strategy. Specifically, the Department is requesting that the permittee provide the information that follows.

The Department, through the New Jersey Geological & Water Survey (NJGWS) and the Division of Land Resource Protection, reviewed three documents submitted by NJNG: (1) August 6, 2020 letter from NJNG; (2) August 6, 2020 letter from NV5, including a report entitled "New Jersey Natural Gas- Southern Reliability Link Project Inadvertent Return Events"; and (3) memorandum dated August 6, 2020 from CCI & Associates, Inc. regarding "Southern Reliability Link Project- 30" HDD7 Review."

Because these documents, at times, overlap in subject matter and may contain recommendations that lack the necessary level of specificity for review, the Department requests that, to comply with the requirements of the suspension letter, NJNG submit a single, comprehensive strategy which clearly outlines a horizontal directional drilling (HDD) pre-construction geologic evaluation, design and operations protocol for all intended HDD sites. Specifically, NJNG must clearly identify how these protocols will ensure the avoidance of further inadvertent return (IR) events, with a particular focus on how the proposed methods will avoid the probable causes of the IR events, including, but not limited to those identified in the NV5 Report (down hole pressure exceeding overburden containment, seepage into soil cracks and pores, artesian water flow, underground utility pathways). Additionally, the Department requests that NJNG provide all documents and borings referenced in the NV5 Report that have not otherwise been included in the August 6, 2020 strategy.

In an effort to provide guidance to NJNG in addressing these requirements, the Department provides broad comments and recommendations for NJNG to address.

- A minimum of three (3) soil borings should be conducted at each of the proposed HDDs, one at the exit, one at the entry point, and one at the midsection. All borings should be installed between 30 to 50 feet off set from the HDD path with each boring finished a minimum of 20 feet deeper than the proposed HDD depth at that point. The NJGWS is requesting the submission of the borings and the design plans for the remaining HDDs for this project. Please include the location and distance of all realty improvements in the vicinity of the proposed HDD locations.
- Additional borings as outlined above shall be conducted at the Hutchinson Road site. Based on the two borings NJNG provided for the Hutchinson Road failure, the borings were not much deeper than the drill path. The new design for the failed HDD by AECOM in the August 6, 2020 letter shows a shallower depth of 40 feet+/- below the surface. The two borings only went to a depth of 47 feet, so the borings done previously may not have even been below the bottom of the original HDD design depth.
- Stress analysis and annular pressure analysis of each HDD should be done for every HDD prior to submission of a Land Use permit application, not after a failure.
- NJNG commits to having two additional professionals onsite for the duration of the HDD drilling:
  - a “qualified mud engineer”
  - a “qualified HDD inspector”NJNG should submit to the Department the criteria used to establish that an individual is “qualified” by describing and certifying the education and experience which makes them “qualified”.
- NJNG states that there are 5 more HDDs planned for this project and additional information is scheduled for collection. It is unclear whether that number includes the failed HDD on Province Line Road at Hutchinson Road since page 3 of the NV5 report states 28 of 34 planned HDDs have been completed. Please clarify.
- NJNG states that additional geotechnical information will be evaluated along with the existing data, drawings and regional geology. For the design of any HDD, the consultant should have a qualified geologist involved utilizing local (not regional) geologic information. The location and distance from proposed HDDs to realty improvements should be determined and evaluated using all available information.

- Nothing is mentioned in the Introduction or Overview of the NV5 report about who designed the HDDs. However, on page 10 NV5 indicates that the HDD contractor designed the HDDs. Clear authorship of the design is requested.
- The NV5 report indicates that the project planned 34 HDDs and 28 have been completed. During the completion of those, there were inadvertent returns (IR) on January 29, 2019, February 4, 7, 8, and 19, 2019, April 4-15, 2020, and June 16 and 19, 2020. The report does not indicate exactly how many IRs occurred. NJNG must report the number of IRs on each date and include a detailed map of the exact locations of the IRs. It appears that a map of the IRs was submitted previously to the Department's Enforcement Office but was not included in this submittal. As requested above, a comprehensive submittal addressing past IRs and proactive evaluation of proposed HDDs is necessary. Please compile and submit all pertinent information, maps and boring documentation.
- NV5 indicates 73 borings were taken along the pipeline route, but they do not mention the number of borings taken specifically for each of the HDD sites. Best practice would be to conduct a boring at every HDD entry point, exit point and at least one intermediary point a minimum of twenty (20) feet below the bottom of the proposed HDD. Without seeing the individual HDD site plans it is difficult to say if the borings covered the HDD drill area. Also, it is stated in this section that AECOM designed the entire pipeline including the HDD trenchless crossings, yet as mentioned above, NV5 indicated the HDD contractor designed the HDDs. Please clarify.
- NV5 outlines a listing of 14 items in the HDD specifications, but there is no mention of keeping records of the various drilling parameters. The drilling contractor and the mud engineer should also keep records on bit pressure, drill rod torque, drilling rate, mud pump pressure, flow rate, and return flow rate. The qualified mud engineer should be monitoring these parameters throughout the HDD attempt. This should be clarified in the revised report.
- NV5 lists 5 days of periodic IR releases from April 9 to 15 on HDD No. 8 and two releases on HDD No. 7 (June 16 and June 19). On page 3, NV5 lists IRs from April 4 to April 15 not April 9 to 15. Were the IR releases for April 4<sup>th</sup> to 8<sup>th</sup> on a different HDD? The location of HDD No. 8 is unclear, but No. 7 is by Hutchinson Road. Based on the AECOM map NJNG provided, both sites may be in the Hornerstown Formation even though the map does not show the actual HDD locations. Please clarify.
- NV5 lists four possible causes for IR:
  - Higher down hole pressure than the overburden could contain.
  - Seepage into cracks and pores in the soil.
  - Artesian water flow.
  - Following the path of underground utilities (abandoned, active, or inactive).

It is unclear how the proposed strategy addresses these probable causes and whether they are, indeed, relevant to the IRs that occurred based on the information outlined below:

- The available geologic maps of the area or the Burlington County Geology and Groundwater Report (Rush, 1968) indicate no significant aquifer in the HDD drill path.
- By the sieve analysis NJNG provided (Figure 8) and the two boring logs, there were no very coarse sands or gravels that would have provided a pathway for the drilling fluid.

- There are no cracks in the Hornerstown Formation since it is an unconsolidated formation as are almost all the New Jersey Coastal Plain formations. The only consolidated Coastal Plain formation is the Tinton Formation which was eroded away prior to the deposition of the Hornerstown Formation in this area.
- At the top of page 7 of the NV5 report, it is stated that NJNG abandoned and properly sealed the pilot hole for HDD7. There is no mention of how the borehole was sealed. NJNG must provide a written detailed record on how the HDD was sealed. NJNG submitted an “Inadvertent Release Plan” which was not submitted as part of this submittal, but as result of a previous meeting. On page 7 of this report it was stated that the abandoned hole will be filled with a bentonite slurry and plugged at the surface with cement grout. The NJGWS does not consider a bentonite slurry and cuttings or just a bentonite slurry a suitable material for grouting an abandoned borehole. Any bentonite used as a grout material must be specifically manufactured as a grout not a drilling fluid.
- On the bottom of page 7 of the NV5 report, it is stated that the contractor was able to seal and complete HDD No. 8 and complete Nos. 6 and 9. It would be useful to have a map showing the locations of the four HDDs mentioned on Province Line Road as well as all the uncompleted HDDs.
- It is difficult to comment on the HDD proposed plan in Section 6.0 of the NV5 report without knowing the locations and depths of the various IRs on both HDD No. 7 and HDD No. 8. More specification is needed.
- It is prudent to have the HDD contractor determine whether a pressure relief system would be necessary in case the mud pump pressure exceeds the formation strength. In addition, it is beneficial to closely monitor penetration rate to prevent the bit from cutting too fast and building up cuttings against the bit or stabilizer and the wall of the borehole. Due to the size of the mud pumps utilized for the HDD drilling, it will be beneficial to closely monitor pressure and the drilling rate as pressure could escalate quickly. A softer zone in coordination with a higher drilling rate could cause a blockage if the cuttings are not flushed out of the hole as fast as they are being produced. A slower drilling rate keeps a cleaner hole.
- The NV5 report notes (on page 9) that “should abandonment of a borehole be required, CCI provides reference material for consideration on how to perform the work.” CCI’s Southern Reliability Link Project HDD Mitigation Plan, dated August 6, 2020, states, “In the event that the HDD cannot be completed successfully, the HDD borehole will be abandoned and grouted by approved installation methods with pre-approved materials. An abandonment plan will be supplied to the HDD contractor summarizing the minimum requirements to aid in creation of the contractor’s grout plan, as required.” These statements do not contain any specific criteria regarding grout materials, placement methods, or minimum depth/length to which the grout would be placed. Please submit a proposed borehole abandonment plan detailing what would be supplied to the HDD contractor. This abandonment plan should be approved by NJGWS in advance of any attempted HDD.
- It is recommended that the firm designing the HDDs have experience dealing with HDDs in geological formations containing mineral glauconite.

While provided here specifically in relation to the permit suspension, the requested clarifications and recommendations are also necessary to address the conditions of the pending NOV's. Please submit the

requested information within 30 days of the date of this letter. Finally, should NJNG satisfy the conditions of these requirements and the subject project be reauthorized, the Department requests that Compliance and Enforcement be present onsite for the initial HDD event(s).

If you have any questions regarding this letter, please contact Ryan Anderson by email at [Ryan.Anderson@dep.nj.gov](mailto:Ryan.Anderson@dep.nj.gov) or by phone at (609) 633-2289. Please reference the Division's file number in all communication.

Sincerely,



Diane Dow, Director  
Division of Land Resource Protection

Cc: Peter Keledy, NJDEP, Bureau of Coastal and Land Use Enforcement (via email)  
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