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Submitted via Email

Craig W. Butler, Director
Ohio Environmental Protection Agency
Attention: Permits Processing Unit
P.O. Box 1049
Columbus, OH 43216-1049
epa.dswcomments@epa.ohio.gov

Re: Shell's Water Quality Certification Application for the Falcon Pipeline

Dear Director Butler:

On behalf of Sierra Club and FreshWater Accountability Project, I hereby submit the following comments in response to the Ohio Environmental Protection Agency's ("Ohio EPA") opening of public comment on Shell Pipeline Company LP's ("Shell") Application for Clean Water Act Section 401 Water Quality Certification for the Falcon pipeline (the "Pipeline," "Falcon," or the "Project").

The Project poses serious threats to Ohio water resources, especially as the Project would exacerbate the cumulative problem of climate change. Yet Shell's Application roundly ignores climate change, and likewise ignores Ohio law requiring Shell to avoid and minimize the wide-ranging harms to Ohio from Shell's dirty energy projects—in contrast, Shell invests billions of dollars in clean energy elsewhere.[1]

[1] Shell invests about one billion dollars per year in clean energy, just not in Appalachia. *See Shell's Sky Scenario: Solar Dwarfs Oil and Gas as World's Primary Source of Energy*, GREENTECH MEDIA, Apr. 17, 2018, attached as Exhibit J, and *also available at* https://www.greentechmedia.com/articles/read/shells-sky-scenario-solar-dwarfs-oil-gas-as-worlds-primary-source-of-energy.

As discussed below, Ohio EPA should either deny Shell's Application as legally deficient, or require Shell to undertake significant revisions to address the deficiencies. If such revisions are made, Ohio EPA should open public comment on the same.

I. COMMENTING ORGANIZATIONS

Sierra Club

Sierra Club is the nation's largest grassroots environmental organization. Nationally and locally, on behalf of its more than 22,000 members in Ohio, Sierra Club advocates a just transition to a clean energy economy. The Project is at odds with this transition. Sierra Club therefore urges Ohio EPA to look hard at the Project's direct, indirect, and cumulative impacts and, so informed, to uphold environmental anti-degradation standards.

FreshWater Accountability Project

FreshWater Accountability Project ("FreshWater") is an Ohio-based, grassroots, nonprofit organization with a mission to preserve freshwater supplies through education and community action, and it is dedicated to promoting the health of current and future generations by protecting the environment. FreshWater has members located throughout the state of Ohio, including members who live, work, worship, own property and/or recreate in Harrison, Carroll, and Jefferson Counties, including those areas to be impacted by the Falcon Pipeline. Through advocacy, legal action, and education, FreshWater strives to protect the very resource that gives us life — our fresh water. FreshWater likewise urges Ohio EPA to look hard at the Project's direct, indirect, and cumulative impacts and, so informed, to uphold environmental anti-degradation standards.

II. THE PROJECT: FACTUAL BACKGROUND

Shell proposes to build the 98-mile Falcon ethane supply pipeline across Pennsylvania, Ohio, and West Virginia to link potential ethane sources — in Houston, PA, Scio, OH, and Cadiz, OH – to Shell's planned petrochemical plant in Monaca, PA. The Project is

part of a Plan to "develop and use Appalachian shale gas and natural gas liquids" (the "Plan")[2] —a plan that would exacerbate the cumulative problem of climate change.[3] Approximately 43.6 miles of the Pipeline are proposed to be located in Harrison, Carroll, and Jefferson Counties.[4] The project, as described in Shell's Application, will include both temporary and permanent impacts to wetlands and water sources.[5]

III. SHELL'S APPLICATION IS LEGALLY DEFICIENT

Any person requesting authorization for an activity that requires a Clean Water Act Section 401 Certification must comply with the application requirements of ORC 6111.30(A) and OAC 3745-32-03(B). Shell's Application fails to meet those requirements in that, without limitation, it does not contain sufficient information to determine existing uses for surface waters, it lacks a mitigation plan for the Ohio portion of the Project, and it lacks important information pertaining to the required alternatives analysis. Shell's Application also contains numerous inconsistencies and errors, making it incomplete for purposes of review, and suggesting that Shell has not given the Application the requisite due diligence.

A. Shell's Application does not contain sufficient information to determine existing uses for surface waters

When a project involves a stream for which a specific aquatic life use under Chapter 3745-1 has not been determined, OAC 3745-32-03(B)(1)(2)(c) and ORC 611.30(A)(3) require the project applicant to provide data sufficient to determine the existing aquatic

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[2] Tri-State Regional Cooperation Agreement, "Agreement to Enhance Regional Cooperation and Job Growth through the Continuing Development of Shale Gas in the Appalachian Basin," ("Plan") Oct. 13, 2015, amended March 15, 2018, attached as Exhibit A, *also available at* http://www.governor.ohio.gov/Portals/0/pdf/AchievementEverywhere/Tri%20State%20Shale%20Regional%20Cooperation%20Agreement%20FINAL%20100915.pdf.

[3] *See* White House Council on Environmental Quality, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, Aug. 1, 2016, at 17 ("All [greenhouse gas] emissions contribute to cumulative climate change impacts.") *available at* https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf [hereinafter Guidance on Climate Change]; *see also* U.S. Global Change Research Program, Climate Science Special Report: Fourth National Climate Assessment, 2017, *available at* https://science2017.globalchange.gov/ ("Fourth Assessment") [hereinafter Climate Special Report] ("Without major reductions in [greenhouse gas] emissions, the increase in annual average global temperatures relative to preindustrial times could reach 9°F (5°C) or more by the end of this century," with disastrous consequences.).

[4] Shell, Individual 401 Water Quality Certification Application, Item 5: Proposed Project Antidegradation Analysis, at Section 1.2.1.

[5] *Id.*

life use. Shell's Application identifies at least 12 such streams within the Project's impact area, comprising at least 2,611 linear feet and involving at least eight stream crossings;[6] however, Shell does not provide data to determine the existing aquatic life use for these streams. Without this information, Shell's Application is incomplete and does not meet the requirements of ORC 611.30(A)(3) and OAC 3745-32-03(B).

B. Shell failed to submit a mitigation plan for the Ohio portion of the Project, as required by ORC 6111.30

Pursuant to ORC 6111.30(A)(4), an application for 401 Certification must include "a specific and detailed mitigation proposal, including the location and proposed real estate instrument or other available mechanism for protecting the property long term." ORC 6111.30(A)(4). While Shell's Application references a "Project Mitigation Plan,"[7] it does not appear that Shell actually provided the same for the Ohio portion of the pipeline. Without this information, Shell's Application is incomplete, and the Director may not issue a 401 Certification for the Project.

At the public hearing regarding the Project, held May 23, 2018, in Cadiz, OH, an Ohio EPA representative stated that, as of the date of the hearing, a mitigation plan for the Ohio portion of the Project had not been submitted. If Shell has provided a mitigation plan for the Ohio portion of the Project, as of the date of this Comment, this information has not been made available to the public for comment.

C. Shell's alternatives analysis is inadequate

Shell's Application identifies only three alternatives: 1) an alternative with an estimated cost of $80-90 million for the entire pipeline, which consists of a 100-foot construction ROW, and includes three Horizontal Directional Drilling ("HDD") locations: two to cross roads and one to cross the Ohio River; 2) an alternative with an estimated cost of $90-100 million for the entire pipeline, which consists of a 75-foot construction ROW, and expands the HDD road crossings planned in the first alternative to include two streams and two wetlands nearby those roads; and 3) an alternative that uses HDD for all stream crossings, at a cost of $2.7 billion for only the Ohio stream crossings, and which Shell states is cost prohibitive.[8]

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[6] Shell, Application for Section 401 Water Quality Certification—Proposed Wetland Impacts and Mitigation, Rev. 12/2016, Page 1 of 3.

[7] Shell, Individual 401 Water Quality Certification Application, Item 5: Proposed Project Antidegradation Analysis, at Section 1.2.4.

[8] *Id*. at Sections 1.2-1.4.

Shell's alternatives analysis does not comply with the requirements of OAC 3745-1-05 and OAC 3745-1-54(D)(1). Shell presents a cursory alternatives analysis in its Application. This analysis fails to actually consider the water resources to be impacted by the Project, to assess those resources, and then to propose reasonable alternatives designed to protect the actual water resources at issue. Indeed, Shell states that the primary driver for route deviations was requirements from private landowners.[9] A June 29, 2016 letter from the Ohio Department of Natural Resources, included in Shell's Application, states that "impacts to streams, wetlands and other water resources should be avoided and minimized to the fullest extent possible,"[10] yet Shell does not present a single alternative driven by this principle, except for the alternative that employs HDD for all stream crossings, which Shell states is cost-prohibitive. Shell never even identifies, let alone explains the basis for eliminating alternatives that would avoid stream crossings.

As such, Shell's alternatives analysis fails to demonstrate avoidance and impact minimization for each Category of wetlands to be impacted in accordance with OAC 3745-1-54(D)(1). Regarding proposed permanent changes to some wetlands within the Project area, Shell's Application does not even contain a compensatory mitigation plan, as required by OAC 3745-1-54(D).

This is a glaring omission that in and of itself requires denial of the Application. Should Ohio EPA deny the Application without prejudice, thereby allowing Shell to fix such glaring omissions via supplemental application material, the public should be provided an opportunity to comment on that material.

Shell's Application must be revised to include a full alternatives analysis designed to avoid and minimize proposed impacts to Ohio's water resources.

D. Pursuant to ORC 6111.30(C), the public must be given the opportunity to comment on a complete application

ORC 6111.30(C) requires a complete application to be submitted prior to the opportunity for public comment. Pursuant to ORC 6111.30(C), the Director must notify Shell that its Application is incomplete and take no further action on Shell's Application until Shell has submitted a complete application and the public has been given the opportunity to comment on the additional material.

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[9] *Id.*, at Section 1.2.2.

[10] Letter from John Kessler, ODNR Office of Real Estate, to Matt Thomayer, AECOM, June 29, 2016, at 2.

IV. WITHOUT SITE-SPECIFIC GEOPHYSICAL SURVEYS FOR EACH HDD CROSSING, OHIO EPA CANNOT LAWFULLY ISSUE A 401 CERTIFICATION

The proposed Project includes three HDD crossings in Ohio, one of which will cross the Ohio River.[11] The Ohio River crossing alone accounts for 7,029.97 feet of HDD. Despite these significant HDD crossings, Shell's Application does not include a detailed HDD plan with detailed site-specific geophysical analysis.

Unfortunately, degradation of Ohio's waters has already repeatedly occurred as a result of HDD for pipeline construction,[12] which should make Ohio EPA well aware of the adverse consequences to wetlands and surface waters that can result from this construction activity. Accordingly, in order to assess whether Ohio EPA can issue a 401 Certification for the Falcon, the Director must first require Shell to provide additional detailed information regarding potential impacts from each proposed HDD crossing.

While HDD can be a method to avoid or minimize surface impacts, including impacts to streams and wetlands, the use of methods involving pressurized drilling fluid (such as HDD) carries a risk of inadvertent return (i.e. unauthorized discharge of drilling muds), aquifer depletion, and ground destabilization. The construction of the Rover Pipeline provides just one example of the degradation Ohio's surface waters and wetlands have already experienced as a result of the use of HDD for pipeline construction. Rover Pipeline LLC discharged millions of gallons of drilling fluids into Ohio's surface waters, including pristine wetlands, in violation of the State's water laws.[13] These discharges — many the result of inadvertent returns from HDD — endangered Ohio's environment in more than ten counties and degraded existing

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[11] Shell, Individual 401 Water Quality Certification Application, Item 5: Proposed Project Antidegradation Analysis, at Section 1.2.

[12] *See e.g.* Tracy Geibel, *Ohio EPA: Rover Pipeline spill leaks 200 gallons of drilling fluid into Black Fork*, ASHLAND SOURCE, included as Exhibit B, *also available at* http://www.richlandsource.com/news/ohio-epa-rover-pipeline-spill-leaks-gallons-of-drilling-fluid/article_cc690fba-d38e-11e7-9b80-c74e7ccb1c65.html (detailing an inadvertent return that resulted in the unauthorized release of 200 gallons of drilling fluid into a tributary of the Mohican River, as well as numerous prior spills into streams and wetlands by construction activities associated with Rover).

[13] *See*, *State of Ohio, ex rel. v. Rover Pipeline, LLC,* Complaint for Injunctive Relief and Civil Penalties, Stark County Court of Common Pleas (Nov. 2016) included as Exhibit C, *also available at* http://www.ohioattorneygeneral.gov/Files/Briefing-Room/News-Releases/Environmental-Enforcement/2017-11-03-Rover-Complaint-Signed-for-Filing.aspx (describing the discharge of several million gallons of drilling fluids into Category 3 wetlands adjacent to the Tuscarawas River, and numerous other illegal discharges into waters of the state).

surface waters and wetlands.[14] Similarly, the Pennsylvania DEP cited Sunoco for more than 130 inadvertent returns since construction began on its Mariner East 2 pipeline.[15] These inadvertent returns caused heavy sedimentation in protected streams in violation of water quality standards and impaired and eliminated existing stream uses. Energy Transfer Partners has quoted the frequency of inadvertent returns as occurring in 50 percent of HDD operations.

In addition to inadvertent returns, HDD can pose a risk to underground sources of drinking water. At least four groundwater wells exist within 1,000 feet of proposed HDD crossings. Additional data is needed regarding the potential of HDD to impact these wells.

Although risks of adverse impacts from HDD can be reduced through robust site-specific geologic and hydrogeologic analysis, and good construction practices, it does not appear that Shell has undertaken the detailed geophysical analysis and planning required to prevent adverse impacts to Ohio's waters and wetlands. While the Application states "the HDD crossings have been evaluated, including a geotechnical investigation, and designed for optimal completion," the Application does not include detailed information regarding a site-specific geophysical survey. Such information is critical for the Director to be able to assess the potential impact of HDD on Ohio's surface waters, including the Ohio River.

V. SHELL HAS NOT DEMONSTRATED THAT THE PROJECT WILL NOT VIOLATE OHIO'S ANTIDEGRADATION REQUIREMENTS

[14] *See e.g.* Tim Busbey, Rover Pipeline work dumps 50,000 gallons of drilling fluid in Mifflin Twp. Wetlands, ASHLAND SOURCE, Apr. 20, 2017, included as Exhibit D, *also available at* http://www.richlandsource.com/ashland_source/rover-pipeline-work-dumps-gallons-of-drilling-fluid-in-mifflin/article_afb6065c-25bf-11e7-96f1-bb1a41e0619b.html (describing the release of 50,000 gallons of into wetlands by crews working on the Rover Pipeline). *See also* Susan Cosier, Natural Resources Defense Council, *Following Spills, Ohio Wants to Reroute the Rover Pipeline but Lacks the Muscle*, Feb. 26, 2018, attached as Exhibit E and *also available at* https://www.nrdc.org/stories/following-spills-ohio-wants-reroute-rover-pipeline-lacks-muscle (commenting on the aforementioned Tuscarawas wetland Rover spill, and stating that it "will likely take years for the area to recover from the bentonite spill, and the cleanup process itself comes with its own issues, including damage from equipment, hoses, and boots").

[15] *See* Reuters Staff, *ETP Mariner East liquids pipe spills more fluid in Pennsylvania*, REUTERS, March 27, 2018, attached as Exhibit F, *also available at* https://www.reuters.com/article/us-china-pollution-refiners/chinas-teapot-refineries-ordered-to-cut-runs-as-port-readies-for-summit-idUSKCN1IU147 (describing inadvertent returns from HDD resulting in unauthorized discharges of drilling muds into wetlands in Pennsylvania).

The Director cannot issue a 401 Certification unless the Director determines that the applicant's activities will not violate Ohio's antidegradation requirements in OAC 3745-1-05 and OAC 3745-1-54. OAC 3745-32-03(D)(1)(a). To date, Shell has not provided sufficient information to demonstrate that the Project will not violate Ohio's antidegradation regulations because, without limitation: it does not account for the cumulative impacts of the Project; it does not address how the Project will prevent the types of inadvertent returns and stormwater management problems that have caused the degradation of surface waters and wetlands impacted by similar projects; it results in permanently degrading the functions of wetlands; and it does not protect and maintain, or even properly assess, existing uses of wetlands and streams. Precisely because Shell has failed to provide the requisite information, the Director cannot lawfully grant a 401 Certification for the Project.

A. Shell's Application omits legally-required information on the cumulative impacts of the Project on the degradation of Ohio's surface waters and wetlands

Regarding cumulative impacts, Shell's Application contains only one short paragraph mentioning the 7.5 miles where the Project will run parallel to other utility right of ways. This analysis is woefully inadequate, and it completely ignores the vast cumulative impacts stemming from the Project.

The Falcon pipeline is just one component of the Plan to "develop and use Appalachian shale gas and natural gas liquids."[16] As part of the Plan, the Falcon would facilitate and enable further development of fossil fuels in the Appalachian Basin, exacerbating the cumulative problem of climate change[17] and threatening profound adverse consequences for Ohio's surface waters.

To assess whether the Falcon will violate Ohio's antidegradation regulations, as required by OAC 3745-32-03(D)(1)(a), the Director must require that Shell provide additional, accurate information that accounts for the role the Falcon plays in the Plan, including information related to greenhouse gases and impacts from climate change, as climate change is happening and has catastrophic environmental effects. As relevant here, these effects include, without limitation, the degradation of surface water via reduction of quality and quantity of wetlands, increased algal blooms, increased

[16] *See* Exhibit A, The Plan.

[17] *See* Guidance on Climate Change, at 17 ("All [greenhouse gas] emissions contribute to cumulative climate change impacts."); *see also* Climate Special Report ("Without major reductions in [greenhouse gas] emissions, the increase in annual average global temperatures relative to preindustrial times could reach 9°F (5°C) or more by the end of this century," with disastrous consequences.).

flooding and subsequent erosion and sedimentation, increased stormwater runoff, loss of biota habitat.

To that end, the Director should require Shell to provide detailed data and analysis of at least the following:

- Sediment pollution,
- Erosion,
- Loss of macroinvertebrate and fish spawning habitats,
- Impacts to wildlife,
- Adverse effects to wetlands, marshes and vernal pools including alteration of vegetation and increased algae growth due to sediment disturbance,
- Permanent removal of riparian and upland vegetation,
- Loss of forest, forest fragmentation, changes in forest ecology and increased edge effect,
- Soil compaction, Increased surface water runoff,
- Reduced groundwater recharge,
- Reduced nutrient cycling capacity and increased algae growth,
- Release of hydrocarbons from heavy equipment leaks and re-fueling,
- Thermal impacts, including from climate change,
- Redirection of groundwater and surface water flows,
- Release of drilling muds,
- Creation of sinkholes,
- Air pollution resulting from methane and other air contaminants,
- Failure of remediation/mitigation efforts including efforts to revegetate construction zones,
- Increased acidification of streams from methane pollution and construction equipment, and potential decreased buffering capacity of waterbodies,
- Impacts to recreation, aesthetics, property values, and property rights, and
- Impacts to health, safety, and the environment.

Until this information has been provided, the Director lacks the information necessary for Ohio EPA to determine that the Falcon will not result in the degradation of Ohio's water resources in violation of OAC 3745-1-05 and OAC 3745-1-54.

B. Shell has not demonstrated that the Project will protect and maintain, and will not eliminate or substantially impair, existing water body uses

According to Shell's Application, the proposed Project will cross 131 stream segments in Ohio.[18] Antidegradation regulations require that existing uses of Ohio's water bodies, and the level of water quality required to protect the same, must be maintained and protected. OAC 3745-1-05(C)(1). As outlined *infra*,[19] Shell's Application fails to even identify the existing uses of numerous water bodies in the Project's path, much less show that the Project will protect and maintain such unidentified uses.

Shell claims the impacts to streams "will be temporary in nature," including impacts from pipeline crossings, equipment crossings via timber mat bridge, and culvert crossings.[20] Further, Shell claims impacts to streams will be resolved during the restoration phase of the Project.[21] However, Shell's Application fails to substantiate these claims. Specifically, Shell provides little to no evidence that it will successfully restore Ohio's streams to their pre-construction uses, or that Shell will not substantially harm or eliminate aquatic life uses due to the length of time between initial impact and completion of the restoration phase of the Project.

Shell's Application also does not provide sufficient information to ensure that exceptional warmwater habitat, headwaters of drinking water sources, and habitat for state listed endangered and threatened species and federal species of concern will be maintained and protected, or that these existing uses will not be eliminated or substantially impaired.

The pipeline industry's track record reveals precisely the opposite. Again, the Rover pipeline's impacts in Ohio are illustrative,[22] as are the continued construction problems with a similar ethane supply pipeline in Pennsylvania, Mariner East 2,[23] which just last week was ordered to stop construction.[24] Ohio EPA assessed $2.3 million in penalties

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[18] Shell, Individual 401 Water Quality Certification Application, Item 5: Proposed Project Antidegradation Analysis, Section 1.2.2.

[19] *See infra* at Section III(A).

[20] Shell, Individual 401 Water Quality Certification Application, Item 5: Proposed Project Antidegradation Analysis, Section 1.2.2.

[21] *Id.*

[22] *See infra* at Section IV.

[23] *See* Commonwealth of Pennsylvania, Department of Environmental Protection, In the matter of Sunoco Pipeline L.P.: Consent Assessment of Civil Penalty, April 27, 2018, Exhibit A, attached as Exhibit K, and *also available at* http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Consent%20Assessment%20of%20Civil%20Penalty%20-%20Exhibit%20A.pdf (listing at least 69 unauthorized discharges between May 2017 and December 2017).

[24] Jon Hurdle, *Mariner East construction, operation halted again in Chester County*, STATE IMPACT PENNSYLVANIA, May 24, 2018, attached as Exhibit G, *also available at*

against Rover for its unauthorized discharge of drilling fluids and sediment-laden stormwater to Ohio's surface waters. Rover refused to pay these penalties, and Ohio is currently litigating to collect the penalties to which it is entitled.[25] Pennsylvania DEP has assessed nearly $13 million in penalties against Mariner East 2 for various violations resulting from construction activities, including unpermitted discharges of drilling fluids to wetlands, wild trout streams, and High Quality Waters in numerous counties.[26]

a. The project threatens exceptional warmwater habitat

Within the Project area, Shell's Application identifies at least 41 Ohio streams classified as exceptional warmwater habitat, with the Project crossing at least 20 of these streams. The exceptional warmwater aquatic life use classifies these waters as "capable of supporting and maintaining an exceptional or unusual community of warmwater aquatic organisms" and having a species composition, diversity, and functional organization comparable to the seventy-fifth percentile of reference sites on a statewide basis. OAC 3745-1-07(B)(1)(c).

Shell's Application does not demonstrate that this exceptional warm water habitat will not be substantially harmed or eliminated by the initial impact or due to the length of time between initial impact and completion of the restoration phase of the project.

b. The project threatens protected headwaters of drinking water sources

Shell's Application states that there are no reservoirs in the Project area. While this may be true, Shell's Application shows, but does not disclose the impacts of, the Project crossing protected headwaters of the Tappan Reservoir watershed at six different locations. The Tappan Reservoir provides drinking water for Scio and Cadiz and is also

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https://stateimpact.npr.org/pennsylvania/2018/05/24/mariner-east-construction-operation-halted-again-in-chester-county/ (describing how Administrative Law Judge granted an emergency petition to halt construction of the Mariner East 2 and operations of the Mariner East 1 due to concerns of a potential catastrophic event occurring, following on an order in March 2018 requiring the Mariner East 1 to stop operations due to the appearance of sinkholes near where construction was taking place).

[25] *See* Exhibit C, *infra* FN 13.

[26] *See* Commonwealth of Pennsylvania, Department of Environmental Protection, In the matter of Sunoco Pipeline L.P.: Consent Assessment of Civil Penalty, April 27, 2018, *available at* http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Consent%20Assessment%20of%20Civil%20Penalty.pdf; *see also* In the matter of Sunoco Pipeline L.P.: Consent Order and Agreement, Feb 8, 2018, *available at* http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Summary_of_Order/Sunoco%20Pipeline%20LP,%20Consent%20Order%20and%20Agreement%20-%20February%208,%202018.pdf.

highly valued for its recreational use, including swimming, fishing, and boating. Without further information regarding the impact to the Tappan Reservoir from these headwater crossings, Shell's Application does not demonstrate that the Project will not violate the antidegradation requirements of OAC 3745-1-05(C)(1).

c. The project threatens state listed endangered and threatened species and federal species of concern

Shell's Application indicates the project is within range of surface waters containing numerous federally listed and state listed endangered and threatened species and state listed protected species. These include, without limitation, two species of state threatened mussels: the black sandshell (*Ligumia recta*) and the threehorn wartyback (*Obliquaria reflexa*); four species of state threatened fish: the river darter (*Percina shumardi*), the paddlefish (*Polyodon spathula*), the channel darter (*Percina copelandi*), Tippecanoe darter (*Etheostoma tippecanoe*); and the state endangered species and federal species of concern the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*).

Shell claims to have addressed any potential impact to the eastern hellbender by re-routing the project to avoid Yellow Creek. However, the route continues to pass through the Yellow Creek watershed, crossing headwaters and tributaries to Yellow Creek. Shell's Application provides no further analysis of this disturbance to the Yellow Creek watershed, including headwaters and tributaries, on the eastern hellbender, despite a known population of eastern hellbenders existing within this habitat.

Similarly, Shell's proposed behavior regarding the two state threatened mussels and the four state threatened fish is entirely inadequate to ensure their protection.

C. The project does not maintain and protect existing wetland uses and may result in the net loss of wetland acreage and functions

a. Shell proposes to unlawfully degrade wetland functions by permanently converting forested scrub-shrub communities to herbaceous communities

Pursuant to OAC 3745-1-54 wetland designated uses must be maintained and protected "such that degradation of surface waters through direct, indirect, or cumulative impacts does not result in the net loss of wetland acreage or functions." The proposed Falcon will cross 68 wetlands, and proposed wetland impacts include pipeline crossings and equipment crossings via timber mat and bridge. Shell's Application states that 5.77 of the 5.98 acres of wetlands Shell anticipates impacting will face temporary impacts,

while 0.21 acres of wetlands will experience permanent impacts. These impacts will take the form of Shell permanently converting forested scrub-shrub communities to herbaceous communities. This conversion would result in a change in functionality in violation of OAC 3745-1-54.

Shell proposes to address this concern by paying into the In-Lieu Fee Program.[27] However, the mitigation plan included with Shell's Application (which only addresses the Pennsylvania portion of the Project) states that In-Lieu Fee crediting is not an option for the Project because no active In-Lieu Fee Programs were or are available.[28] If a mitigation plan for the Ohio portion of the Project that accurately describes Shell's planned In-Lieu Fee Program participation has since been developed by Shell, commenters are not aware of it and it is not included with the public comment materials for the Ohio 401 Certification Application.

b. Shell's Application does not account for the indirect and cumulative impacts of the Falcon on wetlands, as required under OAC 3745-1-54

The plain language of OAC 3745-1-54(B)(1) also clearly requires an analysis of the cumulative and indirect impacts of the Falcon on wetlands. Yet, as described *infra*, Shell's Application lacks any meaningful analysis regarding the indirect[29] and cumulative impacts of the Project on wetlands.

Portions of the proposed Project span areas already heavily impacted by energy development. As just one example, 5.6 miles of the Falcon is proposed to run through active coal mines, including active mines located in Cadiz, OH and Ross Township, OH. The Project also runs through 1.5 miles of an active surface mine in Cadiz Township, OH. Shell's Application presents no information regarding the cumulative impact of adding additional energy infrastructure to a region already heavily impacted by energy development.

Ohio has already lost 90 percent of the wetlands it once had,[30] and wetlands are at risk of rapidly declining in both quantity and quality due to effects associated with climate

[27] Shell, Individual 401 Water Quality Certification Application, Item 5: Proposed Antidegradation Analysis, Section 1.2.4.
[28] Permittee-Responsible Mitigation Plan for the Falcon Ethane Pipelie Project (September 2017), at 2.
[29] OAC 3745-1-54 (B)(5) broadly defines "indirect impacts," giving the Director wide authority to consider additional "other environmental impacts that may be a consequence of approving the request."
[30] Exhibit E, *infra* FN 14.

change.[31] To analyze cumulative and indirect impacts to the functionality and acreage of Ohio's wetlands, the Director must require that Shell provide additional, accurate information that accounts for the role the Falcon plays in the Plan to spur fossil fuel projects in the Appalachian Basin, including information related to greenhouse gases and impacts from climate change, again, because of the catastrophic environmental impacts of climate change, including degradation to Ohio waters.[32]

VI. SHELL HAS NOT DEMONSTRATED THAT THE PROJECT WILL NOT PREVENT OR INTERFERE WITH THE ATTAINMENT OR MAINTENANCE OF APPLICABLE WATER QUALITY STANDARDS AND WILL NOT RESULT IN UNAUTHORIZED DISCHARGES INTO SURFACE WATER

Pursuant to OAC 3745-32-03(D)(1)(b-c), the Director shall not issue a 401 certification unless the Director determines that the applicant has demonstrated that the Project will not prevent or interfere with the attainment or maintenance of applicable water quality standards in Chapter 3745-1 of the Administrative Code and will not result in any other violation of the Clean Water Act.

As detailed in Section IV of this Comment, there is no shortage of examples of pipeline construction leading to unauthorized discharges to surface waters and resulting in violations of water quality standards. Shell has not provided the detailed geophysical surveys required to demonstrate that the Falcon will not prevent or interfere with the attainment or maintenance of Ohio's water quality standards.

In addition to those immediate unauthorized discharges that evidence suggests are nearly guaranteed to occur during pipeline construction activities, the Director must consider the role the Falcon plays in increasing greenhouse gas emissions and exacerbating climate change, and the impact this has on attaining and maintaining water quality standards. Ohio's Lake Erie is already infamous for noxious algal blooms in violation of the State's water quality standards. There is widespread scientific consensus that such blooms are likely to increase as a direct result of our changing

[31] Association of State Wetland Managers, Wetlands & Climate Change, https://www.aswm.org/wetland-science/wetlands-and-climate-change.

[32] *See* Joint Comments of Clean Air Council, et al. Re: Shell Pipeline Company L.P. Joint Permit Applications (Nos. E02-1773, E04-369, and E63-710), and Chapter 102 application (ESG00007170003), attached as Exhibit H; *see also* Fractracker Alliance, Falcon Public EIA Project, *available at* https://www.fractracker.org/projects/falcon-public-eia/.

climate.[33] It follows that the Falcon Pipeline, if built, will interfere with the attainment and maintenance of Ohio's water quality standards.

VII. CONCLUSION

For the foregoing reasons, the Director cannot at this time lawfully issue Shell a 401 Certification for its proposed Falcon Pipeline.

Respectfully submitted,

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[33] Andrea Thompson, *Climate Change Means More Fuel for Toxic Algae Blooms*, CLIMATE CENTRAL, July 27, 2017, attached as Exhibit I, and *also available at* http://www.climatecentral.org/news/climate-change-toxic-algae-blooms-21651.

Exhibit A

REGIONAL COOPERATION AGREEMENT

This **AGREEMENT TO ENHANCE REGIONAL COOPERATION AND JOB GROWTH THROUGH THE CONTINUING DEVELOPMENT OF SHALE GAS IN THE APPALACHIAN BASIN** (this "Agreement"), dated October 13, 2015, is entered into by and among the states of Ohio, West Virginia, and Pennsylvania (sometimes, collectively, the "Participants").

RECITALS

WHEREAS, recent development of deep formation shale plays in the Appalachian Basin has positioned the states of Ohio, West Virginia, and Pennsylvania as an emerging world-class energy center (the "Tri-State Region");

WHEREAS, production of Appalachian shale gas and natural gas liquids surpasses historical precedents every year and promises substantial growth over the next several decades, offering significant economic opportunities for the people of the Tri-State Region as well as providing domestic security for the United States, and diversifying the nation's energy supply and manufacturing base;

WHEREAS, the U.S. Energy Information Administration announced that the Tri-State Region represents 85% of the increase in natural gas production in the United States since January of 2012 and predicts that the Marcellus shale will yield up to 147 trillion cubic feet of natural gas by 2040;

WHEREAS, a recent report issued by a consortium of academic institutions from the Tri-State Region concluded that development of the Utica shale could eclipse the Marcellus shale in natural gas production (*A Geologic Play Book for Utica Shale Appalachian Basin Exploration 2015*, Utica Shale Appalachian Basin Exploration Consortium, WVU) ;

WHEREAS, the Participants recognize that in order to truly prosper from these vast resources, the Tri-State Region should, in an environmentally sound manner, support all streams of the development process with a particular focus on adding value to the natural gas and natural gas liquids located in the Appalachian Basin within the Region;

WHEREAS, the Participants recognize that certain issues may exist related to infrastructure systems, workforce development, and promotional activities, that if overcome, would help the Tri-State Region best harness the potential of Appalachian shale gas and natural gas liquids;

WHEREAS, geographic proximity to North American population centers, access to world-class academic research centers, growth of advanced manufacturing capabilities, access to state-of-the-art training centers at community and technical colleges, and availability of plentiful and affordable feedstock makes the Tri-State Region an extremely competitive destination for current and future manufacturing operations;

WHEREAS, the Participants desire to work with interested stakeholders to evaluate the impact of providing access for the Tri-State Region's energy resources and value-added products to new markets;

WHEREAS, the Participants recognize that a regional strategy will help maximize shale gas opportunities in the Tri-State Region, thereby growing the economic base, attracting new manufacturing jobs, and developing a prepared and able workforce;

WHEREAS, the Participants desire to identify goals, policies, and programs that will ensure Appalachian shale gas and natural gas liquids are utilized as much as possible in local processing and for local business purposes to increase regional prosperity for current and future generations; and

WHEREAS, the Participants desire to work together and adopt a regional strategy as more fully set forth in this Agreement.

NOW THEREFORE, the Participants have reached the following understanding:

I. Purpose

The purpose of this Agreement is to promote and carry out cooperative activities that will maximize opportunities to develop and use Appalachian shale gas and natural gas liquids in a way that optimizes added economic value to the Tri-State Region in a safe and environmentally responsible manner.

II. Areas of Cooperation

The Participants intend to cooperate on the following four primary areas to effectuate the purpose of this Agreement:

A. Marketing and Promotion. Coordinating marketing activities that promote the Tri-State Region as a desirable destination for business and industry to invest in developing and using Appalachian shale gas and its derivatives to create benefits that accrue to each Participant state. The Participants intend to work collaboratively to market and promote the Tri-State Region as an optimal destination to locate or expand business and when appropriate work in a coordinated fashion to target companies that would benefit from the responsible development of these abundant natural resources by focusing on the region's comparative advantages *vis a vis* other national and global markets.

B. Workforce Development. The demand for skilled workers to accommodate the growing demand of the energy industry and manufacturing sectors that benefit from Appalachian shale gas and natural gas liquids requires enhanced levels of cooperative workforce development efforts in the Tri-State Region. The Participants intend to work collaboratively with technical education providers in the Tri-State Region to develop industry-supported and endorsed training programs (e.g., ShaleNET) and foster closer working relationships with interstate employers to ensure that the regional workforce is positioned to support energy and manufacturing projects.

C. Transportation and Infrastructure. Moving natural gas and natural gas liquids in a safe and environmentally sound manner from the source of their extraction to end users and new markets is critical to the long term prosperity and ecological health of the Tri-State Region. This requires investments in road systems, rail lines, waterways, processing centers, and transmission lines. Within the Tri-State Region, billions of dollars in new investment and infrastructure development have been made in the past five years, and billions more are in the planning stages, including the possibility of one or more petrochemical complexes within the region. The Participants intend to work together to support activities that will spur investment in expanding transportation systems to facilitate demand, use, and delivery of natural gas and natural gas liquids while assuring natural resource protection.

D. Research. The Tri-State Region is home to numerous world-class academic institutions of higher learning that are actively involved in advancing cutting-edge research to help capitalize on shale gas opportunities. Advancements in technology, data gathering and analytics, storage, transmission standards, safety programs and policies, and extraction techniques derive from advanced research efforts and practical application in the commercial sectors. The Participants intend to encourage academic institutions to expand collaborative research efforts that identify broader and environmentally-appropriate end uses of natural gas and natural gas liquids, including electricity generation, liquid fuel, feedstock for petrochemicals, alternative transportation fuels, and heating purposes.

III. Forms of Cooperation.

Forms of cooperation under this Agreement may include:

A. Sharing information and experiences about successful policies and programs that have: 1) resulted in the growth of jobs and 2) protected and enhanced human health and the environment;

B. Organizing of symposia, seminars, workshops, exhibition, and training activities;

C. Collaborating to establish and promote entrepreneurship, economic growth, and job creation through innovative policies and programs;

D. Collaborating to identify ways to promote recycling and other environmentally sustainable practices within the industry.

E. Collaborating to identify best practices regarding emergency response protocols and processes within and between states.

F. Any other form of cooperation that the Participants consider may contribute to the goals and purpose of this Agreement.

IV. Cooperative Action Plan and Working Groups.

The Participants intend to develop a Cooperative Action Plan to achieve the objectives of this Agreement. To implement the Cooperative Action Plan, the Participants may establish Working Groups, led by officials representing the Participants, and comprised of experts in the areas that are defined in paragraph II of this Agreement, to pursue the objectives and purpose of this Agreement.

V. Third Party Participation.

If the Participants deem it helpful or convenient, individuals and entities from the private, public, academic, research or other sectors may be invited to support the cooperative activities described in this Agreement.

VI. Funding.

Each Participant intends to pay for expenses related to its own participation, unless alternative financial mechanisms can be used for specific activities, as appropriate, and as approved by their respective executive authority.

VII. Duration.

Cooperation under this Agreement is effective on the date of its signature. This Agreement shall renew annually through December 31, 2018, unless otherwise notified in writing of a Participant's desire to discontinue participation. Any Participant may discontinue its participation in this Agreement by providing written communication to the other Participants. If any Participant decides to discontinue participation in this Agreement, ongoing cooperative activities that have been approved or initiated and that have not concluded should continue, unless otherwise decided by the withdrawing Participant or the Participants.

VIII. Final Provisions.

The Participants acknowledge that this Agreement is only intended to provide for cooperation among the Participants and does not create any legally binding rights or obligations. To the extent that any other provision of this Agreement is inconsistent with this paragraph, this paragraph shall prevail. The Participants commit themselves in good faith to implement this Agreement to the fullest extent possible, subject to any changes in policy or law that they may adopt.

Signed in Morgantown, West Virginia, United States of America, on the thirteenth of October of two thousand fifteen, in three originals, all being equally authentic originals.

FOR THE STATE OF WEST VIRGINIA

_____
Earl Ray Tomblin
Governor

FOR THE STATE OF OHIO

_____
Mary Taylor
Lieutenant Governor

FOR THE STATE OF PENNSYLVANIA

_____
Tom Wolf
Governor

Exhibit B

http://www.richlandsource.com/news/ohio-epa-rover-pipeline-spill-leaks-gallons-of-drilling-fluid/article_cc690fba-d38e-11e7-9b80-c74e7ccb1c65.html

FEATURED

Ohio EPA: Rover Pipeline spill leaks 200 gallons of drilling fluid into Black Fork

Two more spills reported in Ashland County earlier this month

Tracy Geibel, Staff Reporter Nov 27, 2017

File photo.

MILTON TOWNSHIP – Only a few months after the Rover Pipeline was given permission by the Federal Energy Regulatory Commission to continue drilling construction at certain Ohio locations, five more spills have taken place, three close to home for Ashland and Richland County residents.

In addition, on Wednesday, Rover Pipeline plans to host “check presentation events,” including one that will take place in Mansfield. Each county’s emergency management department will receive $10,000.

In the latest incident, the company's construction activity caused 200 gallons of bentonite-based drilling fluid to be released into a tributary of the Mohican River near the Ashland-Richland County border in Milton Township, according to a press release from the Ohio Environmental Protection Agency.

On Nov. 17, the EPA issued a notice of violation to the Texas-based company for the spill, which took place either on or before Nov. 16. The unauthorized release of the drilling fluid, a pollutant, into waters of the state is a violation of Ohio Revised Code 6111.

"In addition to the unacceptable number of new violations that Rover has caused in a matter of a few weeks, I am particularly concerned with the facts surrounding the IR (inadvertent return) that occurred on Nov. 16, 2017," director Craig Butler, of the Ohio EPA, said in a Nov. 22 letter to the Rover Pipeline.

"The IR involved drilling slurry that daylighted just under the water line within the Black Fork Mohican River and was located 1-foot from the river bank."

The incident is Rover's 19th notice of environmental violations in Ohio this year and the fifth since September when FERC allowed drilling to resume at certain locations, the EPA reported. In May, FERC had ordered all new drilling activities to halt along the Rover Pipeline project until the company

complied with new measures and receives authorization.

According to a previous interview with Richland County engineer Adam Gove, most activity was able to continue in the county, except where one horizontal directional drill was needed along the Ashland-Richland County border.

A Nov. 22 letter from Butler of the Ohio EPA also documents two additional Ashland County spills. On Nov. 17, the Ohio EPA issued a notice of violation for a spill of approximately 90 gallons of drilling fluids that took place earlier this month.

The letter states, either on or before Nov. 9, Rover discharged approximately 60 gallons of drilling fluids into state wetlands in Ashland Township, and on or before Nov. 14, a 30-gallon spill affected wetlands in Milton Township.

Because of these spills, Butler asked Rover to pause horizontal drilling activities, review its contingency plan and ensure readiness to respond to future inadvertent returns.

“I find it very troubling how only a few short weeks after being allowed to restart operations by FERC in Ohio, we are continuing to document significant violations. I cannot explain how disappointed I am with the continued trend of Rover causing environmental damage in Ohio by continuing operations causing unauthorized discharges to Ohio waterways,” Butler said in the letter.

“I understand the significance of this project, and while Ohio remains supportive of oil and gas infrastructure development, it cannot come at a cost of jeopardizing public health or the environment.”

He noted that all three recent spills in Ashland County are near the location that a 50,000 gallon spill occurred in April. Drilling fluids were dumped into wetlands near Amoy-Pavonia Road in Mifflin Township in eastern Richland County by crews working on the Rover Pipeline.

Currently, Rover also is in violation of Ohio EPA's July 7 orders. According the EPA, the company has refused to comply with the order or pay an appropriate civil penalty. The EPA has referred the case to the Ohio Attorney General, who has taken action on this.

Tracy Geibel
Staff Reporter

I am a proud Pennsylvania native who joined the staff in April 2017. I like coffee, tacos and sometimes extreme couponing. Most of my free time is spent planning my June 2019 wedding.

Exhibit C

IN THE COURT OF COMMON PLEAS
STARK COUNTY, OHIO

STATE OF OHIO, *EX REL.*	:	**CASE NO.** 2017CV02216
MICHAEL DEWINE	:	
OHIO ATTORNEY GENERAL	:	**JUDGE** Farmer
Environmental Enforcement Section	:	
30 East Broad Street, 25th Floor	:	
Columbus, Ohio 43215	:	
	:	
Plaintiff,	:	**COMPLAINT FOR**
	:	**INJUNCTIVE RELIEF**
v.	:	**AND CIVIL PENALTIES**
	:	
ROVER PIPELINE, LLC	:	
3738 Oak Lawn Ave.	:	
Dallas, Texas 75219	:	
c/o **Corporation Service Company**	:	
Statutory Agent	:	
50 West Broad Street, Suite 1330	:	
Columbus, Ohio 43215	:	
	:	
Defendant.	:	

I. NATURE OF THE ACTION

During construction of an interstate, natural-gas pipeline, Defendant Rover illegally discharged millions of gallons of drilling fluids to Ohio's waters, causing pollution and degrading water quality on numerous occasions and in various counties across the state. Additionally, Rover's activities harmed pristine wetlands in Stark County that require the highest level of protection. Finally, Rover caused the degradation of Ohio's waters by discharging pollution in the form of sediment-laden stormwater to Ohio's waters on multiple occasions.

Rover failed to secure any water pollution permits designed to control these discharges. The company has a permit to address unrelated water pollution, but the company violated that permit as well. Whether its actions (and failures to act) stem from a series of calculated business

decisions or complete indifference to Ohio's regulatory efforts, Rover has endangered the environment in more than ten counties (including Stark) and violated state laws, rules, and permits designed to protect the quality of Ohio's waters.

Plaintiff State of Ohio, by and through the Attorney General Michael DeWine, and at the written request of the Director of the Ohio Environmental Protection Agency on September 20, 2017, hereby institutes this action to enforce R.C. Chapter 6111 and the rules and permits adopted thereunder against Defendant Rover, for injunctive relief and the assessment of civil penalties. Specifically, the Plaintiff alleges as follows:

II. GENERAL ALLEGATIONS

A. Defendants

1. Defendant Rover Pipeline, LLC ("Rover"), located at 3738 Oak Lawn Avenue, Dallas, Texas 75219, is a limited liability company organized under the laws of the State of Delaware and registered with the Ohio Secretary of State as a foreign limited liability company since July 10, 2014.

2. Corporation Service Company, 50 West Broad Street, Suite 1330, Columbus, Ohio 43215 is the statutory agent for Rover.

3. Rover is a "person," as defined by R.C. 1.59, R.C. 6111.01, Ohio Adm.Code 3745-32-01, Ohio Adm.Code 3745-33-01, and Ohio Adm.Code 3745-38-01.

4. At all times and locations relevant to this Complaint, Defendant Rover is the owner or operator of drilling operations for the construction of a 713-mile, interstate pipeline crossing 18 counties in Ohio including Stark County. Rover has control, authority, direction, and responsibility over underground horizontal-directional-drilling for the construction of the pipeline repeatedly referenced throughout this Complaint. Through this control, authority,

direction, and responsibility over the construction of the pipeline and/or through its activities, Rover caused, participated in, controlled, authorized, directed, and/or acted, or failed to act, in violation of R.C. Chapter 6111, the rules adopted, and the permits issued thereunder as alleged in this Complaint.

B. Jurisdiction and Venue

5. This Court has jurisdiction over the subject matter of this action, personal jurisdiction over Defendant Rover, and authority to grant the relief requested pursuant to R.C. 2307.382, R.C. 6111.07, and R.C. 6111.09.

6. At all times and locations, Defendant Rover has purposefully availed itself of this forum. The activities (or failures to act) and/or control, authority, direction, and responsibility over the activities (or failures to act) caused all environmental violations alleged in this Complaint in Ohio including Stark County. Defendant Rover has transacted business and/or contracted to supply services or goods in Ohio, and in Stark County specifically, or has an interest in, use, and/or possess real property in Ohio and in Stark County.

7. As the allegations in the Complaint reveal, the exercise of specific jurisdiction over Defendant Rover is proper and consistent with due process.

8. Venue lies in the Stark County Court of Common Pleas pursuant to Civ.R. 3(B) and Civ.R. 3(E).

9. Pursuant to Civ.R. 8(A), the State informs the Court that the amount sought is in excess of twenty-five thousand dollars ($25,000.00).

C. Cooperative Federalism: the Relationship between Relevant Federal and State Law

10. Federal law—specifically, the Natural Gas Act—regulates "the transportation of natural gas in interstate commerce." 15 U.S.C. § 717(b).

11. The Natural Gas Act yields to any state right reserved under the Federal Water Pollution Control Act, 33 U.S.C. § 1251, *et seq*, also known as the Clean Water Act. 15 U.S.C. § 717b(d).

12. Enacted in 1972, Congress intended the Clean Water Act to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a).

13. The Clean Water Act expresses the national goal of eliminating the discharge of pollutants into navigable waters by 1985. 33 U.S.C. § 1251(a)(1). Section 101(a)(2) of the Clean Water Act further establishes "that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983." 33 U.S.C. § 1251(a)(2).

14. To achieve these goals, Section 301 of the Clean Water Act prohibits "the discharge of pollutants by any person," except as permitted under certain sections of the Clean Water Act. 33 U.S.C. § 1311(a).

Clean Water Act – Rights Reserved for the States

15. The Clean Water Act recognizes that "[i]t is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources * * *." 33 U.S.C. § 1251(b).

16. Congress also granted authority to the states by ensuring that "nothing * * * shall (1) preclude or deny the right of any State or political subdivision thereof or interstate agency to adopt or enforce (A) any standard or limitation respecting discharges of pollutants, or (B) any requirement respecting control or abatement of pollution * * *." 33 U.S.C. § 1370. Further, Congress made clear that the Clean Water Act shall not "be construed as impairing or in any

manner affecting any right or jurisdiction of the States with respect to the waters (including boundary waters) of such States." 33 U.S.C. § 1370.

17. Consistent with its delegated authority under federal law, Ohio has enacted laws and adopted rules prohibiting actions and mandating requirements in order to protect water quality. The pertinent laws and rules to this action are set forth in greater detail below.

Ohio's Prohibition against Polluting Waters of the State

18. Revised Code 6111.04(A) prohibits any person from causing pollution or placing or causing to be placed "any sewage, sludge, sludge materials, industrial waste[s] or other wastes in a location where they cause pollution of any waters of the state" unless that person holds a valid, unexpired permit to do so. Such an action constitutes "a public nuisance," under R.C. 6111.04(A)(2).

19. "Pollution," as defined in R.C. 6111.01(A), includes, but is not limited to, the placing of "industrial waste" or "other wastes" in any "waters of the State."

20. "Industrial waste," as defined in R.C. 6111.01(C), "means any liquid, gaseous, or solid waste substance resulting from any process of industry, manufacture, trade, or business, or from the development, processing, or recovery of any natural resource, together with such sewage as is present."

21. "Other wastes," as defined in R.C. 6111.01(D), includes but is not limited to "dredged or fill material, or silt, other substances that are not sewage, sludge, sludge materials, or industrial waste."

22. "Waters of the state," as defined in R.C. 6111.01(H), means "all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems,

and other bodies or accumulations of water, surface and underground, natural or artificial * * * that are situated * * * within * * * this state * * *."

Ohio's NPDES Permitting Program for Point Source Discharges

23. Ohio administers a federally-delegated, National Pollutant Discharge Elimination System ("NPDES") permit for point source discharges of any pollutant to waters of the state. *See, e.g.* 33 U.S.C. § 1342(b).

24. Ohio Adm.Code 3745-33-02(A), adopted under R.C. 6111.03, states that "[n]o person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant without applying for and obtaining an Ohio NPDES permit in accordance with the requirements of [Ohio Adm.Code Chapter 3745-33]."

25. Ohio Adm.Code 3745-33-01 defines "discharge of a pollutant or pollutants" as "any addition of any pollutant to waters of the state from a point source."

26. Ohio Adm.Code 3745-33-01 defines "pollutant" as "sewage, industrial waste or other waste as defined by" R.C. 6111.01(B) to (D).

27. Ohio Adm.Code 3745-33-01 defines "point source" as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged."

28. Upon information and belief, Defendant Rover uses drilling fluids—mixtures of water and bentonite—for its drilling operations. These drilling fluids ordinarily assist in the lubrication and encasement of the pipeline underground, but when discharged to waters of the state, are "industrial wastes" or "other wastes" under R.C. 6111.01 and also "pollutant[s]" under Ohio Adm.Code 3745-33-01.

29. At all times and locations relevant to this Complaint, Defendant Rover, through its control, authority, direction, and responsibility over its drilling operations, used equipment and created underground bores or channels for its pipeline, all of which are point sources as defined in Ohio Adm.Code 3745-33-01.

Ohio's General NPDES Permits for
Storm Water Associated with Construction and Industrial Activities

30. Ohio Administrative Code 3745-38-02(A)(1) provides that no person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant from a point source without applying for and obtaining an Ohio NPDES individual permit or obtaining authorization to discharge under an Ohio NPDES general permit.

31. "Discharge of any pollutant or pollutants" and "point source," as defined in Ohio Adm.Code 3745-38-01, share the same definitions in Ohio Adm.Code 3745-33-01 above.

32. Ohio Adm.Code 3745-38-02(B)(2)(a) authorizes the Director to "issue a general NPDES permit * * * for storm water point sources."

33. On April 11, 2013, pursuant to his authority in Ohio Adm.Code 3745-38-02(B)(2)(a), the Director issued a General NPDES Permit for Storm Water Discharges Associated with Construction Activities, Permit No. OHC000004 ("Construction Storm Water Permit"). The Construction Storm Water Permit is appended at **Attachment 1** and hereby incorporated by reference as if fully rewritten herein.

34. The Construction Storm Water Permit regulates storm water discharges associated with construction activities that enter waters of the State. *See* Attachment 1 p. 3.

35. "Construction activity" is defined in the Construction Storm Water Permit as "any clearing, grading, excavating, grubbing and/or filling activities that disturb" either "one or more acres of total land, or will disturb less than one acre of land but are part of a larger common plan

of development * * * that will ultimately disturb one or more acres of land." Attachment 1, Part I, B.1, p. 3.

36. "Large construction activities" is defined by the Construction Storm Water Permit as involving the disturbance of five or more acres of land or will disturb less than five acres, but is a part of a larger common plan of development or sale which will disturb five or more acres of land. Attachment 1, Part III.G.2.e, p. 19.

37. Upon information and belief, in constructing its natural gas pipeline, Defendant Rover has cleared, graded, excavated, grubbed and/or filled at least 5 acres of total land. Defendant Rover is thus engaged in "construction activities" and "large construction activities" as defined in the Construction Storm Water Permit, Attachment 1, Part I, B.1, p. 3 and Part III.G.2.e, p. 19.

38. On May 8, 2017, pursuant to his authority in Ohio Adm.Code 3745-38-02(B)(2)(a), the Director issued a General NPDES Permit for Storm Water Discharges Associated with Industrial Activities, Permit No. OHR000006 ("Industrial Storm Water Permit"). The Industrial General Permit is appended at **Attachment 2** and hereby incorporated by reference as if fully rewritten herein.

39. The Industrial Storm Water Permit regulates storm water discharges associated with industrial activities that enter waters of the State. *See* Attachment 2 p. 1.

40. "Storm water discharge associated with industrial activity," in pertinent part, includes storm water discharges from "construction activity including clearing, grading and excavation" involving the disturbance of five or more acres of land or that will disturb less than five acres, but is a part of a larger common plan of development or sale which will disturb five or more acres of land. Ohio Adm.Code 3745-39-04(B)(14)(j).

41. Upon information and belief, in constructing its natural gas pipeline, Defendant Rover has cleared, graded, excavated, grubbed and/or filled at least 5 acres of total land. Defendant Rover is thus considered to be engaged in industrial activity in accordance with Ohio Adm.Code 3745-39-04(B)(14)(j).

Limited Exemption from Storm Water Permitting for Oil and Gas Facilities

42. Federal regulations generally exempt oil and gas exploration, production, processing, or treatment operations or transmission facilities from obtaining a storm water permit for their activities. *See* 40 C.F.R. 122.26(c)(1)(iii).

43. Ohio's rules contain a similar exemption at Ohio Adm.Code 3745-39-04(A)(2)(b) with respect to storm water permitting, stating that no permit is required for discharges of storm water runoff from, in pertinent part, "[a]ll field activities or operations associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement of drilling equipment, whether or not such field activities or operations may be considered to be construction activities, except in accordance with paragraph (C)(1)(c) of this rule."

44. However, both the federal and Ohio's exemption for oil and gas facilities are limited—they cease to apply when the otherwise exempted facility causes a discharge of storm water that contributes to a violation (exceedance) of a water quality standard. *See* 40 C.F.R. 122.26(c)(1)(iii)(C)[1] and Ohio Adm.Code 3745-39-04(C)(1)(c)(iii), respectively.

[1] 40 CFR 122.26(a)(2)(ii) states that "[d]ischarges of sediment from construction activities associated with oil and gas exploration, processing, or treatment operations or transmission facilities are not subject to the provisions of paragraph (c)(1)(iii)(C) of this section. However, the Ninth Circuit Court of Appeals vacated this subsection of the rule in *NRDC v. EPA*, 526 F.3d 591, 608 (9th Cir. 2008). As a result, storm water discharges composed entirely of sediment can trigger the requirement to obtain a storm water permit for an oil and gas operation if sediment contributes to a violation (exceedance) of a water quality standard.

45. Ohio Adm.Code 3745-1-02(B) defines "water quality standards" as "the rules set forth in [Ohio Adm.Code Chapter 3745-1] establishing stream use designations and water quality criteria protective of such uses for the surface waters of the state."

46. In essence, if an oil or gas operation discharges, or controls, authorizes, directs, or has responsibility over a discharge of storm water that exceeds any of Ohio's water quality standards, that operation must submit an application for an Ohio NPDES storm water permit pursuant to Ohio Adm.Code 3745-39-04(C) and/or 3745-38-02.

47. Upon information and belief, on at least the following dates and at the following locations, Defendant Rover caused point source discharges of sediment-laden storm water to waters of the state from its construction activities that violated (exceeded) water quality standards:

(a) April 10, 2017: unnamed tributaries to the Woodsfield Reservoir in Monroe County;

(b) April 12, 2017: Bull Creek, at Tank Road, southeast of the Village of Cygnet in Wood County;

(c) May 2, 2017: unnamed tributary to South Branch Portage River located near the intersection of Pelton Road and Portage View Road, Bloomdale, Wood County;

(d) May 3, 2017: Brushy Fork Creek, at 77960 Slater Road, Cadiz, Harrison County;

(e) May 4, 2017: an unnamed tributary to Eckert Ditch, located on Cloverdale Road north of Oil Center Road, Wood County;

(f) May 4, 2017: an unnamed tributary to Pea Vine Creek, Belmont County;

(g) May 5, 2017: Brush Creek, located near the Village of Cadiz, Harrison County;

(h) May 5, 2017: Hammer Creek, located southwest of the intersection of County Road 2 and County Road H, Henry County;

(i) May 5, 2017: an unnamed tributary to Lost Creek, located at County Road 11, south of County Road J, Henry County;

(j) May 5, 2017: Huff Run and Wetland W8H-TU-225, located at Access 12 – Lindentree Road, Sandy Township, Tuscarawas County;

(k) May 5, 2017: an unnamed tributary of Conotton Creek, Wetland W4ES-TU-217, and Wetland W4ES-TU-217 at Access 6 – Dawn Road, Warren Township, Tuscarawas County; and

(l) May 8, 2017: an unnamed tributary to Sandy Creek and/or Wetland W3H-TU-223, located at Access 15 – Sandyville Road, Sandy Township, Tuscarawas County.

48. At least as early as May 12, 2017, Ohio EPA notified Defendant Rover that its storm water discharges contributed to violations of Ohio's water quality standards including but not limited to Ohio Adm.Code 3745-1-04(A) and/or (C), and as a result, the storm water permit exemption for oil and gas operations no longer applied. Consequently, Defendant Rover was required to obtain coverage under an Ohio NPDES permit to regulate its storm water discharges pursuant to Ohio Adm.Code 3745-39-04(C)(1)(c)(iii).

49. Following this notification, Rover continued to engage in construction activities without a permit and continued to discharge sediment-laden storm water. Upon information and belief, on at least the following dates and at the following locations, Defendant Rover's construction activities caused point-source discharges of sediment-laden storm water to waters of the state:

(a) July 13, 2017: Old Bean Creek, located in Fulton County;

(b) July 14, 2017 and July 17, 2017: an unnamed tributary to Cat Run, located in Monroe County;

(c) July 25, 2017: McMahon Creek, located in Belmont County;

(d) July 25, 2017: Conotton Creek, located in Tuscarawas County;

(e) July 28, 2017: Dining Fork, located in Carroll County; and

(f) September 20, 2017: a tributary of Irish Creek, at Branch Road SE in Loudon Township, Carroll County.

Ohio's Water Quality Standards

50. Ohio adheres to "the policy of the Congress to * * * protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution * * *" by adopting the water quality standards in Ohio Adm.Code Chapter 3745-1. 33 U.S.C. § 1251(b).

51. Ohio Adm.Code 3745-1-04(A) provides, in part, that "all surface waters of the state" shall be "[f]ree from suspended solids or other substances that enter the waters as a result of human activity and that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life."

52. Ohio Adm.Code 3745-1-04(B) provides, in part, that "all surface waters of the state" shall be "[f]ree from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation."

53. Ohio Adm.Code 3745-1-04(C) provides, in part, that "all surface waters of the state" shall be "[f]ree from materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance."

54. Ohio Adm.Code 3745-1-51 incorporates Ohio Adm.Code 3745-1-04 and adds criteria specific to wetlands.

55. Ohio Adm.Code 3745-1-51(A) provides that "[t]he hydrology necessary to support the biological and physical characteristics naturally present in wetlands shall be protected to prevent significant adverse impacts on:

(1) Water currents, erosion or sedimentation patterns;
(2) Natural water temperature variations;
(3) Chemical, nutrient and dissolved oxygen regimes of the wetland;
(4) The movement of aquatic fauna;
(5) The pH of the wetland; and

(6) Water levels or elevations, including those resulting from ground water recharge and discharge."

56. Ohio Adm.Code 3745-1-51(B)(1) provides that "[w]ater quality necessary to support existing habitats and the populations of wetland flora and fauna shall be protected to prevent significant adverse impacts on:

(a) Food supplies for fish and wildlife;
(b) Reproductive and nursery areas; and
(c) Dispersal corridors, as that term is defined in rule 3745-1-50 of the Administrative Code."

57. Ohio Adm.Code 3745-1-02(B) defines "[w]etlands" as "those areas that are inundated or saturated by surface or ground water at a frequency and duration that are sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. 'Wetlands' includes swamps, marshes, bogs, and similar areas that are delineated in accordance with 1987 United States army corps of engineers wetland delineation manual and any other procedures and requirements adopted by the United States army corps of engineers for delineating wetlands."

58. For the purposes of this Complaint, "wetlands" are "marshes * * * springs, irrigation systems, drainage systems, and other bodies or accumulations of water, surface and underground, natural or artificial * * * that are situated * * * within * * * this state * * *," and thus, wetlands are "waters of the state" under R.C. 6111.01(H).

59. Wetlands are assigned quality designations under Ohio Adm.Code 3745-1-54. Pertinent to this Complaint, wetlands assigned to "Category 3" are the highest quality of wetlands categorized under Ohio law. Ohio Adm.Code 3745-1-54(D)(1)(c).

Director's Authority to Issue Orders under R.C. Chapter 6111

60. Under R.C. 6111.03(H)(1), the Director of Ohio EPA has the authority to "issue * * * orders to prevent, control, or abate water pollution * * *."

61. On or before April 13, 2017 and continuing to date to be determined, Defendant Rover deposited spent drilling mud containing diesel fuel residuals at the Oster Sand and Gravel Disposal Pit located near the City of Massillon's public water system's public drinking water intake and the Beach City Quarry located in proximity to the City of Canton's Sugarcreek drinking wellfield.

62. To address the contaminated drilling waste and Defendant Rover's other environmental violations, the Director of Ohio EPA, pursuant to R.C. 6111.03, issued Orders against Defendant Rover on July 7, 2017 ("Director's Orders" affixed hereto as **Attachment 3**).

63. The Orders, in part, required Defendant Rover to submit various plans for approval to protect against surface and ground water pollution. Pursuant to the Orders, Ohio EPA approved the following plans submitted by Defendant Rover on or about the following dates:

(a) "Release Prevention and Emergency Response Contingency Plan": August 4, 2017;

(b) "Material Removal Plan-Oster and Beach City Quarries (version 3)"—Rover's Industrial Waste Disposal Plan: August 4, 2017;

(c) "Horizontal Directional Drill (HDD) Sampling Plan": August 4, 2017;

(d) "Tuscarawas River Wetland Restoration Plan": August 3, 2017;

(e) "Stark County Sample and Analysis Plan": August 11, 2017;

(f) "Stark County Plan – Ground Water Monitoring Well Installation Work Plan Supplement": August 11, 2017;

(g) "Aqua Massillon Plan": August 11, 2017;

(h) "Work Plan for Installation of Monitoring Wells: Aqua Massillon (Oster Sand and Disposal Pit) and Quarry Plan (Beach City Quarry)": August 10, 2017;

(i) "Quarry Plan": August 11, 2017; and

(j) "Storm Water Pollution Prevention Plan": August 11, 2017

64. The Orders also required Defendant Rover to perform ground water assessments following any release of contamination to groundwater and implement corrective measures if sampling shows that ground water quality has been impacted. Attachment 3, ¶18, 19, 30, 31, 42, and 43.

65. The Orders also mandated that Defendant Rover provide relief to nearby residents, Aqua Massillon, or the City of Canton, as applicable, if sampling shows that Defendant is contaminating any water supply well downgradient, including drilling new drinking water wells, or siting and development of a new drinking water well field including permitting and installation of drinking water supply wells in the new field, taking into account the costs of design, such that a sustainable or adequate, and uncontaminated source of ground water is assured. Attachment 3, ¶20, 32, 44, and 45.

66. Finally, the Orders required Rover to submit a notice of intent to obtain coverage under Ohio EPA's Construction Storm Water Permit by July 14, 2017. Attachment 3, ¶8.

Rover's Only NPDES Point Source Discharge Permits: Hydrostatic General Permits

67. On October 31, 2012, pursuant to his authority in R.C. 6111.035, the Director issued a General NPDES Permit for discharges resulting from hydrostatic test water for a limited duration from a point source to waters of the state, Permit No. OHH000002 ("Hydrostatic Permit"). The Hydrostatic Permit is appended at **Attachment 4** and hereby incorporated by reference as if fully rewritten herein

68. At all times relevant to this Complaint, Defendant Rover operated under the Hydrostatic Permit. The Director assigns authorization under the Hydrostatic Permit depending on the location of the discharge. As pertinent to this Complaint, Nos. 0GH00217 and 0GH00218 regulate Defendant Rover's activities in Harrison and Belmont Counties; Nos. 3GH00071 and

3GH00072 regulate Defendant Rover's activities in Stark and Wayne Counties; and Nos. 2GH00035 and 2GH00036 regulate Defendant Rover's activities in Seneca and Wood Counties. The language of the Hydrostatic Permit remains the same regardless of the number assigned to the authorization.

69. These hydrostatic permits regulate point-source releases of hydrostatic water from tanks and pipelines used to detect leaks and determine the structural integrity of relevant equipment.

Ohio's Enforcement of Water Pollution Control

70. Revised Code 6111.07(A) provides that "[n]o person shall violate or fail to perform any duty imposed by sections 6111.01 to 6111.08 of the Revised Code or violate any order, rule, or term or condition of a permit issued or adopted by the director of environmental protection pursuant to those sections. Each day of violation is a separate offense."

71. The Director adopted Ohio Adm.Code 3745-1-02, 3745-1-04, 3745-1-51, and 3745-1-54 under R.C. 6111.041.

72. The Director adopted Ohio Adm.Code 3745-32-01, 3745-32-02, 3745-33-01, 3745-33-02, and 3745-39-04 under R.C. 6111.03.

73. The Director adopted Ohio Adm.Code 3745-38-01 and 3745-38-02 under R.C. 6111.03 and R.C. 6111.035.

74. Revised Code 6111.07(B) provides that "[t]he attorney general, upon written request of the director, shall bring an action for an injunction against any person violating or threatening to violate this chapter or violating or threatening to violate any order, rule, or condition of a permit issued or adopted by the director pursuant to this chapter."

75. Revised Code 6111.09(A) provides that "[a]ny person who violates [R.C. 6111.07] shall pay a civil penalty of not more than ten thousand dollars per day of violation," and the Ohio Attorney General shall commence an action against any person for any violation of R.C. 6111.07 upon the Ohio EPA Director's written request.

D. Allegations are incorporated in all Counts.

76. The allegations contained in Paragraphs 1 through 75 of this Complaint are incorporated into each and every Count of this Complaint as if fully restated therein.

III. CLAIMS FOR RELIEF

COUNT ONE
ROVER DISCHARGED POLLUTANTS TO WATERS OF THE STATE WITHOUT POINT SOURCE NPDES PERMITS

77. Revised Code 6111.04(A)(1) prohibits any person from causing or placing or causing to be placed any industrial wastes or other wastes, in a location where they cause pollution of any waters of the state without a valid, unexpired permit issued by the Director of Ohio EPA.

78. Ohio Adm.Code 3745-33-02(A) prohibits any person from discharging any pollutant or causing, permitting, or allowing a discharge of any pollutant without applying for and obtaining an Ohio NPDES permit in accordance with Ohio Adm.Code Chapter 3745-33.

79. Defendant Rover, through its control, authority, direction, and responsibility, caused the following point-source discharges to waters of the state. To date, Defendant Rover has failed to apply for and obtain point-source NPDES permits in violation of R.C. 6111.04(A)(1) and Ohio Adm.Code 3745-33-02(A).

80. On or before April 8, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 1,000 gallons of drilling fluids to waters of the state—i.e.,

wetlands located near the crossing of Indian Fork River, near Dawn and Miller Hill Roads, in Warren Township, Tuscarawas County (latitude 40° 31.06" North / longitude 81° 17.173" West).

81. On or before April 10, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 600 gallons of drilling fluids to waters of the state, including an unnamed stream, pond, and wetlands located in Richland Township, Belmont County (latitude 40.03.59.9 North / longitude 80.58.36.4 West).

82. On or before April 13, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately several million gallons of drilling fluids to waters of the state—i.e., wetlands identified as high quality Category 3, located adjacent to the Tuscarawas River in Navarre Township, Stark County (latitude 40.40 270 North / longitude 81.29 098 West). Upon information and belief, these drilling fluids included diesel fuel as an additive.

83. On or before April 14, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 50,000 gallons of drilling fluids to waters of the state—i.e., wetlands located near Amoy Pavonia Road, Mifflin Township, Richland County (latitude 40.49.759 North / longitude 82.25.071 West).

84. On or before April 22, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 200 gallons of drilling fluids to waters of the state—i.e., an unnamed ditch located at 4489 Prairie Lane Road, Wooster Township, Wayne County.

85. On or before May 8, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 10,000 gallons of drilling fluids to waters of the state—i.e., a stream and a pond located in Monroe Township, Harrison County.

86. On or before June 2, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 420 gallons of drilling fluids to waters of the state—i.e., wetlands located at North Orchard Rd., NE and Creek 82, Sandy Township, Tuscarawas County.

87. On or before July 2, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 5,000 gallons of drilling fluids to waters of the state—i.e., wetlands identified as Category 3, located adjacent to the Tuscarawas River in Navarre Township, Stark County (latitude 40.40 270 North / longitude 81.29 098 West).

88. On or before July 3, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 2,500 gallons of drilling fluids to waters of the state—i.e., wetlands identified as Category 3, located adjacent to the Tuscarawas River in Navarre Township, Stark County (latitude 40.40 270 North / longitude 81.29 098 West).

89. On or before July 14, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 1,000 gallons of drilling fluids to waters of the state—i.e., wetlands located at 9236 Riverland Ave., SW, Bethlehem Township, Stark County.

90. On or before October 11, 2017 and continuing until a date to be determined, Defendant Rover discharged approximately 1200 gallons of drilling fluids to waters of the state—i.e., wetlands located in Washington Township, Belmont County.

91. The acts or omissions alleged in this Count constitute violations of R.C. 6111.04(A) and Ohio Adm.Code 3745-33-02(A), which constitute violations of R.C. 6111.07(A), for which Defendant Rover is liable and subject to injunctive relief pursuant to R.C. 6111.07(B) and for which Defendant Rover is liable to pay to the State of Ohio a civil penalty up to ten thousand dollars ($10,000.00) for each day of each violation including each day subsequent to filing this Complaint under R.C. 6111.09.

COUNT TWO
ROVER FAILED TO OBTAIN A GENERAL STORM WATER PERMIT FOR ITS STORM WATER DISCHARGES

92. Revised Code 6111.04(A)(1) prohibits any person from causing or placing or causing to be placed any industrial wastes or other wastes, in a location where they cause pollution of any waters of the state without a valid, unexpired permit issued by the Director of Ohio EPA.

93. Ohio Adm.Code 3745-38-02(A), issued pursuant to R.C. 6111.035, prohibits any person from discharging any pollutant or causing, permitting, or allowing a discharge of any pollutant from a point source without applying for and obtaining an individual NPDES permit in accordance with Ohio Adm.Code Chapter 3745-33 or obtaining authorization to discharge under a general NPDES permit under Ohio Adm.Code Chapter 3745-38.

94. At least as early as May 12, 2017, Ohio EPA notified Defendant Rover that its previous storm water discharges contributed to violations of Ohio's water quality standards including but not limited to Ohio Adm.Code 3745-1-04(A) and/or (C), and as a result, the storm water permit exemption for oil and gas operations in Ohio Adm.Code 3745-39-04(A)(2)(b) no longer applied. Consequently, Defendant Rover was required to obtain coverage under an Ohio NPDES permit to regulate its storm water discharges pursuant to Ohio Adm.Code 3745-39-04(C)(1)(c)(iii).

95. From May 12, 2017 to present, Rover has failed to obtain coverage under Ohio EPA's Construction Storm Water Permit or Industrial Storm Water Permit in violation of R.C. 6111.04(A)(1), Ohio Adm.Code 3745-38-02(A) and Ohio Adm.Code 3745-39-04(C)(1)(c)(iii).

96. The acts or omissions alleged in this Count constitute violations of R.C. 6111.04(A), Ohio Adm.Code 3745-38-02(A) and Ohio Adm.Code 3745-39-04, which constitute violations of R.C. 6111.07(A), for which Defendant Rover is liable and subject to injunctive relief pursuant to

R.C. 6111.07(B) and for which Defendant Rover is liable to pay the State of Ohio a civil penalty up to ten thousand dollars ($10,000.00) for each day of each violation including each day subsequent to filing this Complaint under R.C. 6111.09.

COUNT THREE
ROVER VIOLATED OHIO'S GENERAL WATER QUALITY STANDARDS

97. Ohio Administrative Code 3745-1-04, adopted pursuant to R.C. 6111.041, requires, in pertinent part, that all surface waters of the state shall be free from: (A) suspended solids or other substances that enter the waters as a result of human activity that will adversely affect aquatic life; (B) floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation of the waters; and/or (C) materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance.

98. Upon information and belief, each of Defendant Rover's unpermitted drilling fluid discharges into waters of the state, as detailed in Paragraphs 80 through 90 of this Complaint were severe enough to violate Ohio's general water quality standards as set forth in Ohio Adm.Code 3745-1-04(A), 3745-1-04(B), and/or 3745-1-04(C).

99. Upon information and belief, each of Defendant Rover's unpermitted storm water discharges into waters of the state, as detailed in Paragraphs 47 and 49 of this Complaint were severe enough to violate Ohio's general water quality standards as set forth in Ohio Adm.Code 3745-1-04(A), 3745-1-04(B), and/or 3745-1-04(C).

100. The acts or omissions alleged in this Count constitute violations of Ohio Adm.Code 3745-1-04, which constitute violations of R.C. 6111.07(A), for which Defendant Rover is liable and subject to injunctive relief pursuant to R.C. 6111.07(B) and for which Defendant Rover is

liable to pay the State of Ohio a civil penalty up to ten thousand dollars ($10,000.00) for each day of each violation including each day subsequent to filing this Complaint under R.C. 6111.09.

COUNT FOUR
ROVER VIOLATED OHIO'S WETLAND WATER QUALITY STANDARDS

101. Specific to waters of the state that are wetlands, Ohio Adm.Code 3745-1-51(A), adopted pursuant to R.C. 6111.041, requires the protection of the hydrology necessary to support the biological and physical characteristics naturally present in wetlands to guard against significant adverse impacts on: (1) water currents, erosion or sedimentation patterns; (2) natural water temperature variations; (3) Chemical, nutrient and dissolved oxygen regimes of the wetland; (4) the movement of aquatic fauna; (5) the pH of the wetland; and (6) water levels or elevations, including those resulting from ground water recharge and discharge.

102. Also specific to wetlands, Ohio Adm.Code 3745-1-51(B)(1), adopted pursuant to R.C. 6111.041, requires the protection of water quality necessary to support existing habitats and the populations of wetland flora and fauna shall be protected to prevent significant adverse impacts on: (a) food supplies for fish and wildlife; (b) reproductive and nursery areas; and (c) dispersal corridors.

103. Upon information and belief, Defendant Rover's unpermitted drilling fluid discharges into wetlands, as detailed in Paragraphs 80 through 83 and Paragraphs 86 through 90 of this Complaint, were severe enough to violate Ohio's wetland water quality standards in Ohio Adm.Code 3745-1-51(A) and/or 3745-1-51(B)(1).

104. Upon information and belief, Defendant Rover's unpermitted storm water discharges into wetlands, as detailed in Paragraph 47(k) of this Complaint were severe enough to violate Ohio's wetland water quality standards in Ohio Adm.Code 3745-1-51(A) and/or 3745-1-51(B)(1).

105. The acts or omissions alleged in this Count constitute violations of Ohio Adm.Code 3745-1-51, which constitute violations of R.C. 6111.07(A), for which Defendant Rover is liable and subject to injunctive relief pursuant to R.C. 6111.07(B) and for which Defendant Rover is liable to pay the State of Ohio a civil penalty up to ten thousand dollars ($10,000.00) for each day of each violation including each day subsequent to filing this Complaint under R.C. 6111.09.

COUNT FIVE
ROVER VIOLATED THE DIRECTOR'S ORDERS

106. The Director's Orders (Attachment 3, ¶ 8), issued under R.C. 6111.03, require Rover to submit a notice of intent to obtain coverage under Ohio EPA's Construction Storm Water Permit by July 14, 2017.

107. To date, Defendant Rover has failed to obtain coverage under the Construction Storm Water Permit or even submit a notice of intent to obtain coverage under the Construction Storm Water Permit.

108. The acts alleged in this count constitute violations of the Director's Orders, which constitute violations of R.C. 6111.07(A), for which Defendant Rover is liable and subject to injunctive relief under R.C. 6111.07(B), and Defendant Rover is liable to pay civil penalties up to ten thousand dollars ($10,000.00) for each day of each violation including each day subsequent to filing this Complaint under R.C. 6111.09.

COUNT SIX
ROVER VIOLATED THE HYDROSTATIC PERMIT

Rover's Effluent Limit Violations – Suspended Solids and Oil and Grease

109. Table 001 (Part III. A.1.) and Part V. A. of Defendant Rover's Hydrostatic Permit Nos. 2GH00035 and 2GH00036 require Defendant Rover to comply with a total-suspended-

solids effluent limit of 45 milligram per liter ("mg/L") for a daily maximum and 30 mg/L for monthly average. Attachment 4 p. 6, 10.

110. On or about August 5, 2017, Defendant Rover violated these limits in NPDES permit Nos. 2GH00035 and/or 2GH00036 by discharging effluent with suspended solids measuring 60 mg/L from a segment of its operation referred to as Spread C, Line A into Honey Creek in Seneca County.

111. On or about August 19, 2017, Defendant Rover violated these limits in NPDES permit No. 2GH00035 by discharging effluent with suspended solids measuring 87 mg/L from a segment of its operation referred to as Spread C, Line A into Honey Creek in Seneca County.

112. Table 001 (Part III. A.1.) and Part V. A. of Defendant Rover's Hydrostatic Permit No. 2GH00035 also requires Defendant Rover to comply with an oil-and-grease effluent limit of 10 mg/L. Attachment 4 p. 6, 10.

113. On or about July 29, 2017, Defendant Rover violated this limit in Hydrostatic Permit Nos. 2GH00035 and/or 2GH00036 by discharging effluent with oil and grease measuring 30.5 mg/L from a segment of its operation referred to as Spread D, Line A into the South Fork, Portage River in Wood County.

Rover's Failure to Report Effluent Limit Violations

114. Part V. S. 1.a. and Part V. A. of Defendant Rover's Hydrostatic Permit Nos. 2GH00035 and 2GH00036 require Defendant Rover to report noncompliance as a result of any violation of a daily maximum discharge limit for pollutants including suspended solids and oil and grease within 24 hours of discovery by e-mail or telephone. Attachment 4 p. 10, 18.

115. At least through on or about August 31, 2017, Defendant Rover failed to report its violation of maximum discharge limits for suspended solids (discharged on or about August 5,

2017 and on or about August 19, 2017 into Honey Creek in Seneca County) and for oil and grease (discharged on or about July 29, 2017 into South Fork, Portage River in Wood County) in violation of Hydrostatic Permit Nos. 2GH00035 and/or 2GH00036.

Rover's Failure to Monitor for All Parameters – Iron and pH

116. Table 001 (Part III. A.1.) and Part V. A. of Defendant Rover's Hydrostatic Permit Nos. 0GH00217, 0GH00218, 3GH00071, and 3GH00072 require monitoring of parameters including iron and pH. Attachment 4 p. 6, 10.

117. On or about July 12, 2017, Defendant Rover discharged effluent including iron from a segment of its operation referred to as Spread B, Line A into Killbuck Creek in Wayne County, regulated by Hydrostatic Permit Nos. 3GH00071 and/or 3GH00072. Defendant Rover failed to produce a sample result for iron as required for this discharge.

118. On or about July 29, 2017, Defendant Rover discharged effluent and failed to produce a sample result of pH as required for the discharge from a segment of its operation referred to as Spread 1, Line A into Clearfork Creek in Harrison County, regulated by Hydrostatic Permit Nos. 0GH00217 and/or 0GH00218.

119. On or about August 1, 2017, Defendant Rover discharged effluent including iron from a segment of its operation referred to as Spread B, Line B into Muddy Fork in Wayne County, regulated by Hydrostatic Permit Nos. 3GH00071 and/or 3GH00072. Defendant Rover failed to produce a sample result for iron as required for this discharge.

120. On or about August 4, 2017, Defendant Rover discharged effluent including iron from a segment of its operation referred to as Spread B, Line A into Muddy Fork in Wayne County, regulated by Hydrostatic Permit Nos. 3GH00071 and/or 3GH00071. Defendant Rover failed to produce a sample result for iron as required for this discharge.

Rover's Failure to Report or Properly Report Discharge Information

121. Part V. L.1, Part V. L.3. and/or Part V. L.4. and Part V. A. of Defendant Rover's Hydrostatic Permit Nos. 0GH00218, 3GH00071, and 3GH00072 require Defendant Rover to mail signed, complete, and accurate discharge monitoring reports to Ohio EPA by the 20th day of the month following the month of interest on forms provided by Ohio EPA. Attachment 4 p. 10, 15, 16.

122. Before on or about August 31, 2017, Defendant Rover failed to submit discharge monitoring reports for a discharge that occurred on or about July 27, 2017 from Spread A, Line A into Sugar Creek in Stark County as required by Hydrostatic Permit Nos. 3GH00071 and/or 3GH00072.

123. On or about September 15, 2017, Defendant Rover submitted a discharge monthly report to Ohio EPA and indicated that "no discharge" occurred. Defendant Rover failed to submit the required sample analysis for the discharge that occurred on or about August 30, 2017 from a segment of its operation referred to as Spread A, Line A into Wheeling Creek in Belmont County as required by Hydrostatic Permit No. 0GH00218. To date, Defendant Rover has failed to report this required sample analysis.

Rover's Failure to Properly Sample – pH, Dissolved Oxygen, and Chlorine

124. Part V. M. and Part V. A. of Defendant Rover's Hydrostatic Permit Nos. 0GH00217 and 0GH00218 require Defendant Rover to sample parameters in accordance with 40 C.F.R. 136, "Test Procedures For The Analysis of Pollutants," which in turn requires the sampling of field data for pH, dissolved oxygen, and chlorine immediately within 15 minutes of collection. 40 C.F.R. 136, Table II: Required Containers, Preservation Techniques, and Holding Times. Attachment 4 p. 10, 16.

125. Until on or about August 31, 2017, Defendant Rover failed to sample pH, dissolved oxygen, and chlorine field data immediately within 15 minutes of collection and instead performed laboratory analysis on these parameters.

* * *

126. The acts or omissions alleged in this Count constitute violations of Rover's Hydrostatic Permit Nos. 0GH00217, 0GH00218, 2GH00035, 2GH00036, 3GH00071, 3GH00072, which constitute violations of R.C. 6111.07(A), for which Defendant Rover is liable and subject to injunctive relief pursuant to R.C. 6111.07(B) and for which Defendant Rover is liable to pay to the State of Ohio a civil penalty up to ten thousand dollars ($10,000.00) for each day of each violation including each day subsequent to filing this Complaint under R.C. 6111.09.

COUNT SEVEN
ROVER ENGAGED IN ACTIVITIES WITHOUT EFFECTIVE CERTIFICATION

127. Ohio Adm.Code 3745-32-02(B), adopted under R.C. 6111.03, prohibits any person from engaging in an activity requiring a state 401 water quality certification prior to obtaining that certification from Ohio EPA.

128. Ohio Adm.Code 3745-32-02(C), adopted under R.C. 6111.03, states that no state 401 water quality certification is effective until all applicable fees have been paid.

129. On February 24, 2017, the Ohio EPA Director journalized a state 401 water quality certification for Defendant Rover. However, Defendant Rover failed to pay all fees for the state 401 water quality certification until May 15, 2017.

130. Consequently, from February 24, 2017 through May 15, 2017, Defendant Rover engaged in activity requiring the state 401 water quality certification without an effective certification.

131. The acts or omissions alleged in this Count constitute violations of Ohio Adm.Code 3745-32-02(B) and Ohio Adm.Code 3745-32-02(C), which constitute violations of R.C. 6111.07(A), for which Defendant Rover is liable and subject to injunctive relief pursuant to R.C. 6111.07(B) and for which Defendant Rover is liable to pay the State of Ohio a civil penalty up to ten thousand dollars ($10,000.00) for each day of each violation including each day subsequent to filing this Complaint under R.C. 6111.09.

PRAYER FOR RELIEF

THEREFORE, Plaintiff respectfully requests that this Court:

A. Permanently enjoin Defendant Rover to comply with R.C. Chapter 6111 and the rules adopted thereunder;

B. Permanently enjoin Defendant Rover from discharging any pollutant, other wastes, or industrial wastes into wetlands and other waters of the state except in compliance with R.C. Chapter 6111, the rules adopted thereunder, and any necessary permits and/or 401 certifications issued pursuant to R.C. Chapter 6111 or rules adopted thereunder;

C. Permanently enjoin Defendant Rover to submit to Ohio EPA a written notice of intent to obtain coverage under Construction Storm Water Permit or Industrial Storm Water Permit;

D. Permanently enjoin Defendant Rover to obtain coverage and comply with the Construction Storm Water Permit or Industrial Storm Water Permit;

E. Permanently enjoin Defendant Rover to comply with the Ohio EPA-approved plans as named below:

(a) "Release Prevention and Emergency Response Contingency Plan";

(b) "Material Removal Plan-Oster and Beach City Quarries (version 3)"—Rover's Industrial Waste Disposal Plan;

(c) "Horizontal Directional Drill (HDD) Sampling Plan";

(d) "Tuscarawas River Wetland Restoration Plan";

(e) "Stark County Sample and Analysis Plan";

(f) "Stark County Plan – Ground Water Monitoring Well Installation Work Plan Supplement";

(g) "Aqua Massillon Plan";

(h) "Work Plan for Installation of Monitoring Wells: Aqua Massillon (Oster Sand and Disposal Pit) and Quarry Plan (Beach City Quarry)";

(i) "Quarry Plan"; and

(j) "Storm Water Pollution Prevention Plan."

F. Permanently enjoin Defendant Rover to perform ground water assessments following any release of contamination to groundwater and implement corrective measures if sampling shows that ground water quality has been impacted

G. Permanently enjoin Defendant Rover to provide relief to nearby residents, Aqua Massillon, or the City of Canton, as applicable, if sampling shows that Defendant is contaminating any water supply well downgradient, including drilling new drinking water wells, or siting and development of a new drinking water well field including permitting and installation of drinking water supply wells in the new field, taking into account the costs of design, such that a sustainable or adequate, and uncontaminated source of ground water is assured.

H. Permanently enjoin Defendant Rover to comply with the Hydrostatic Permit Nos. 0GH00217, 0GH00218, 3GH00071, 3GH00072, 2GH00035, and 2GH00036.

I. Permanently enjoin Defendant Rover to submit the required sample analysis for the discharge that occurred on or about August 30, 2017 from a segment of its operation referred to as Spread A, Line A into Wheeling Creek in Belmont County as required by Hydrostatic Permit No. OGH00218.

J. Order Defendant Rover, pursuant to R.C. 6111.09, to pay civil penalties in an amount of ten thousand dollars ($10,000.00) for each day of each violation;

K. Order Defendant Rover to reimburse Ohio EPA for all costs incurred;

L. Order Defendant Rover to pay all costs and fees for this action, including attorney fees assessed by the Office of the Ohio Attorney General;

M. Retain jurisdiction of this suit for the purpose of making any order or decree which it may deem necessary at any time to carry out its judgment; and

N. Grant such other relief as may be just.

Respectfully submitted,

MICHAEL DEWINE
OHIO ATTORNEY GENERAL

AARON S. FARMER* (0080251)
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Exhibit D

http://www.richlandsource.com/ashland_source/rover-pipeline-work-dumps-gallons-of-drilling-fluid-in-mifflin/article_afb6065c-25bf-11e7-96f1-bb1a41e0619b.html

FEATURED

Rover Pipeline work dumps 50,000 gallons of drilling fluid in Mifflin Twp. wetlands

Tim Busbey, Asst. Editor Apr 20, 2017

Construction crews work to build the Rover Pipeline in western Ashland County Thursday morning. A spill involving construction of the pipeline took place in eastern Richland County last week.

Tim Busbey, Asst. Editor

MIFFLIN TOWNSHIP (UPDATED at 1 p.m. with comments from pipeline)– An estimated 50,000 gallons of drilling fluids were dumped into wetlands in Mifflin Township in eastern Richland County by crews working on the Rover Pipeline, according to documents filed last week with the Ohio Environmental Protection Agency.

The spill involved drilling fluids from horizontal directional drilling related to construction of the buried pipeline being built by Houston-based Energy Transfer Partners.

James Lee, spokesman for the Ohio EPA, said the spill took place on Friday, April 14, in the area of Amoy-Pavonia Road and was reported to the EPA by Energy Transfer Partners.

According to Ohio EPA paperwork, the drilling fluids accumulated within an estimated 30,000 square foot area of wetlands. The drilling fluids, which included bentonite and cuttings from the natural formation, coated the area with a layer of mud and impacted water quality. Bentonite is a natural clay mud used as a lubricant for drilling.

After being informed of the spill, the Ohio EPA issued a notice of violation for the unauthorized discharge to waters of the state, in this case a wetland, Lee said.

Lee emphasized that no private wells or public water systems were impacted by the spill.

Vacuum trucks and pumping systems are being used by the company to clean up the spill and the Ohio EPA is monitoring the situation.

According to Lee, discharges of bentonite mud and other material into waters of the state (including wetlands) can affect water chemistry, and potentially suffocate wildlife, fish and macroinvertebrates. Any affected public water systems would need to apply extensive and costly treatment in order to remove the material from the source water.

It’s unknown if the company will receive any fines or further sanctions at this time.

“Right now, Ohio EPA is focused on cleanup,” Lee said.

In its filings, the EPA warned Energy Transfer Partners to stop dumping drilling fluids into the wetlands, clean up the dump site, and take appropriate steps to dispose of the drilling mud properly in the future.

According to Lee, small quantities of the bentonite had been coming to the surface during construction but construction crews were able to keep it contained, pumping the clay mud back to a rig, until a pump failed on April 14, allowing the spill.

Alexis Daniels, spokeswoman for Energy Transfer Partners, said in an e-mailed statement that Rover immediately referred to its procedures plan in place to properly dispose of the mud in accordance with all regulations and laws, as soon as the release was noted. Daniels emphasized that the drilling mud that was released is made up of natural clay and water and is non-toxic and it is not harmful to the environment.

Daniels said the spill has been completely cleaned up and the work on that section of the pipeline has been completed.

A larger spill from pipeline construction crews was reported in Stark County, where 2 million gallons spilled into a wetland adjacent to the Tuscarawas River.

The $4.2 billion Rover Pipeline will move natural gas produced by wells in the Marcellus and Utica shale formations from southeastern Ohio to distribution points in western Ohio, Michigan and Canada. The 713-mile pipeline, which will tatransport 3.25 billion cubic feet of natural gas each day, is expected to be finished and operating by the end of the year.

Construction on the pipeline started in March after the project received a certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission in February.

Exhibit E

OUR STORIES › MIDWEST DISPATCH

Following Spills, Ohio Wants to Reroute the Rover Pipeline but Lacks the Muscle

High-profile disasters on the controversial pipeline prompted the feds to temporarily halt construction, but the state demands a more permanent solution.

February 26, 2018

Susan Cosier

Cleanup effort of the Rover Pipeline spill in Stark County, Ohio

Ohio EPA

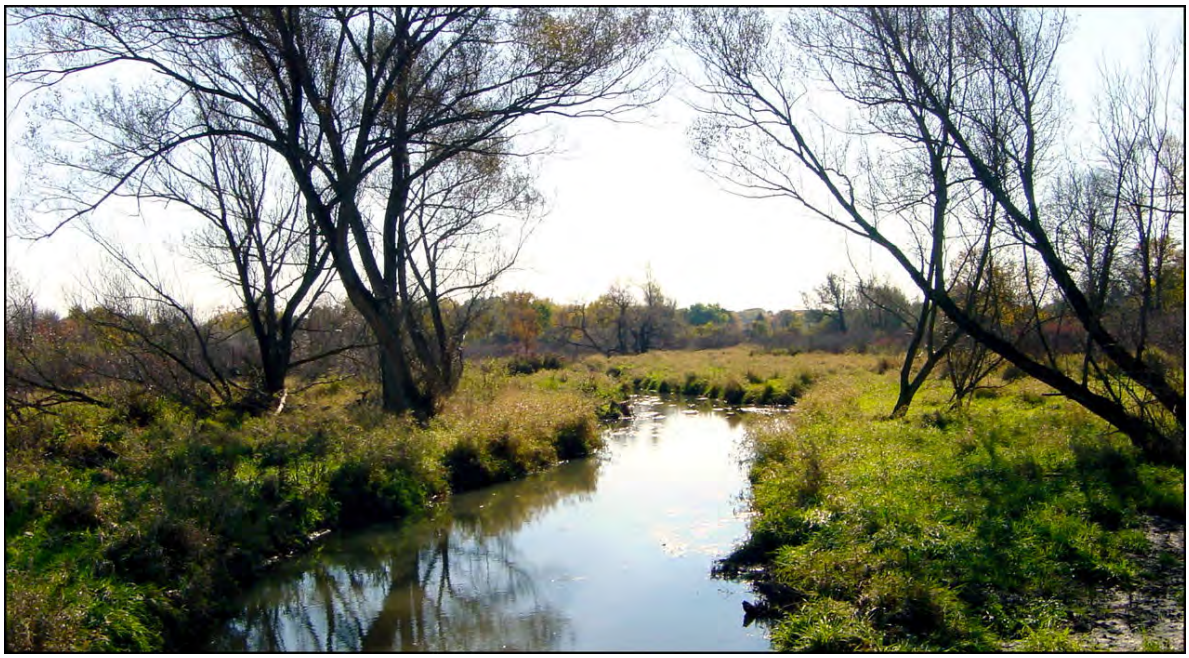
Workers dressed in army-green chest-high waders fanned out into a northeast Ohio wetland last April and laid down a containment boom to trap a thick blanket of gray mud. Using an industrial-size hose, they vacuumed up the viscous sludge known as bentonite slurry, a mixture of water and clay used to lubricate drills. The concoction bubbled to the surface when Texas-based Energy Transfer Partners dug an underground borehole for its interstate Rover Pipeline, a 713-mile conduit that will transport natural gas from West Virginia and western Pennsylvania to distribution hubs in Ohio and Michigan.

At this section of the pipeline, an Energy Transfer crew was using horizontal directional drilling—a technique intended to cause less landscape disruption than traditional trenching—to burrow underneath the Tuscarawas River and adjacent wetlands. But as the drill bit cut through earth under high pressure, cracks formed and an estimated two million gallons of drilling fluid escaped to the surface. The diesel-tainted mud coated half a million square feet of the protected Stark County wetland, asphyxiating an untold number of plants, amphibians, and other aquatic life.

The disastrous spill was not the first for Energy Transfer, and not the last. Since construction began on the Rover Pipeline last March, the company has racked up at least 104 reported incidents, ranging from razing a historic house to spilling drilling fluid near drinking water wells. Ohio's Environmental Protection Agency issued fines of more than $2.3 million to the company for violating air and water regulations, but Energy Transfer, claiming exemption from state regulation, has refused to pay. The Federal Energy Regulatory Commission (FERC) halted construction at the site last May while Energy Transfer drew up new plans for dealing with environmental concerns. Work resumed in September.

Vowing to finish the pipeline in the first quarter of 2018, Energy Transfer pressed on with drilling until January, when disaster struck again: Another 150,000 gallons of bentonite slurry disappeared down a borehole in the same Ohio wetland. State regulators called on FERC to halt the drilling there, and once again FERC complied.

Damage to wetlands is particularly serious in Ohio because there aren't many left. The state is home to just 10 percent of the wetlands it once had, says Mark Dilley, president of the Ohio Wetlands Association. The state should do everything it can, he adds, to protect what's left instead of endangering the plants and animals that live there. It will likely take years for the area to recover from the bentonite spill, and the cleanup process itself comes with its own issues, including damage from equipment, hoses, and boots, says Dilley.



Hoover Park Connector Trail wetlands, adjacent to Tuscarawas River, Canton, Ohio

be OH be/Flickr

Then there's Energy Transfer's environmental track record, which doesn't exactly inspire confidence. The same company built the infamous Dakota Access Pipeline, whose construction sparked months of protests in North Dakota two years ago. That pipeline has leaked five times since it began operating in 2017. And the Rover Pipeline itself has received more negative inspection reports than any other major interstate natural gas pipeline built in the past two years, according to Bloomberg.

In a recent letter to FERC, Ohio EPA director Craig Butler wrote that "Ohio cannot support" the Energy Transfer environmental protection plan because it provides only temporary solutions to pipeline leaks and proposes ways to minimize drilling fluid losses rather than ways to prevent them in the first place. The state regulators, who lack the authority to block the pipeline, have urged FERC to require the company to reroute the second of the two pipes it is digging under the river and wetlands, or to make do with the one already in place. An Energy Transfer spokesperson says the company is in compliance with the approved plans and has completed 99 percent of the Rover Pipeline.

Dilley, who works as a consultant with energy companies, maintains that some areas of the state should nevertheless remain off-limits, including those with high-quality wetlands. “As a society we need to think about what our comfort level is with these sorts of risks,” he says. “Some of the routing decisions should factor in public opinion and knowledge of aquatic resources around those routes. There might be sensitive areas that should be avoided at all costs.”

If not, those sites may be crawling with cleaning crews in the future, too.

RELATED STORIES

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Controversial New Pipelines May Slice Through the Southeast

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One of the Worst Places for a Pipeline? Under the Great Lakes

ONEARTH STORY

Oil Shouldn't Have to Spill to Get Us to Fight for the Environment

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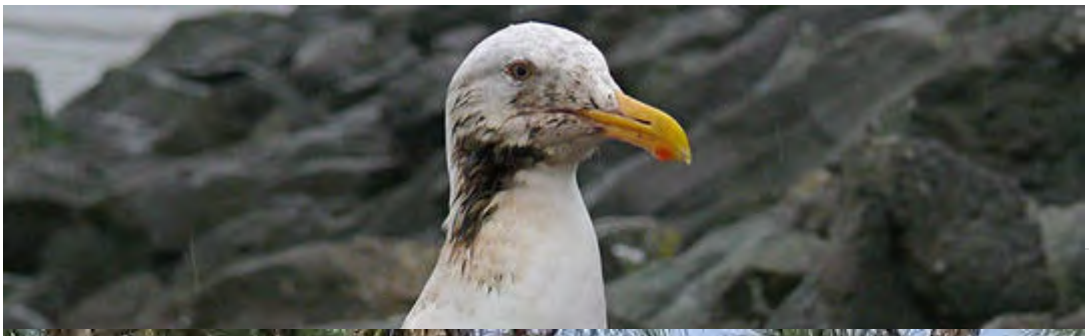

flight and

ONEARTH STORY

Oil Drilling and Wetlands Don't Mix—Especially in Big Cypress

On a national preserve at the edge of the Everglades, oil exploration is threatening fragile habitat and endangered species, from woodpeckers to panthers.

est

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Exhibit F

ENVIRONMENT

MARCH 27, 2018 / 10:32 AM / 2 MONTHS AGO

ETP Mariner East liquids pipe spills more fluid in Pennsylvania

Reuters Staff

(Reuters) - Pennsylvania environmental regulators on Monday issued another notice of violation to Energy Transfer Partners LP's Sunoco Mariner East 2 natural gas liquids pipeline for releasing drilling fluids into a wetland.

The company told the Pennsylvania Department of Environmental Protection (DEP) it released less than one gallon (4 liters) of drilling fluids - usually a mix of clay and water - into a wetland in Shirley Township in Huntingdon County located about 80 miles (129 kilometers) west of Harrisburg, the state capital. The spill was associated with a horizontal drill.

The DEP said it must approve before ETP can resume drilling at the site.

This is the latest in a long series of spills by the $2.5 billion project that have slowed its construction.

Since May 2017, the DEP said the project had 108 inadvertent releases, or spills, prompting the environmental regulator to issue 46 notices of violation.

Officials at ETP were not immediately available for comment.

It was ETP's second release into this wetland after spilling between 5,000-10,000 gallons in the area in October. The DEP issued a notice of violation for that earlier spill.

The latest release comes after Pennsylvania utility regulators on March 7 suspended operations of ETP's Sunoco Mariner East 1 liquids pipeline after sinkholes were discovered near the project.

The shutdown of Mariner 1 and delays for Mariner 2 have forced shippers, including Range Resources Corp, to find another home for their liquids and is likely causing more ethane to be rejected into the region's natural gas pipelines, according to analysts.

Mariner 1 transports up to 70,000 barrels per day (bpd) of propane and ethane from the Marcellus and Utica shale formations in western Pennsylvania to customers in the state and elsewhere, including ETP's Marcus Hook industrial complex near Philadelphia.

The sinkholes were near the area where construction is under way for Mariner 2. The order stopping flows on Mariner 1 did not affect work on Mariner 2.

Construction of Mariner 2, which started in early 2017, was originally expected to be completed in the third quarter of 2017 but has been delayed by repeated work stoppages by Pennsylvania regulators, among other things.

ETP has said it expects to complete Mariner 2 by the end of the second quarter.

Once complete, Mariner 2 will expand the total capacity of the Mariner East project to 345,000 bpd and open the pipe to suppliers in Ohio and West Virginia.

Reporting by Scott DiSavino; Editing by Marguerita Choy

Our Standards: *The Thomson Reuters Trust Principles.*

ENVIRONMENT

MAY 29, 2018 / 6:15 AM / UPDATED 17 HOURS AGO

China's teapot refineries ordered to cut runs as port readies for summit

Meng Meng, Chen Aizhu

DONGYING, China (Reuters) - At least five independent refineries in Shandong, China's northern province, have been ordered to cut operating rates as Beijing aims for blue skies for a regional summit in port city Qingdao next month, sources at the companies said.

The instructions come as Qingdao prepares to host the Shanghai Cooperation Organization (SCO) summit on June 9-10. China typically takes such steps ahead of major political gatherings to ensure they proceed with clear air and without any accidents that could disrupt events.

The cuts range between 30 percent and 50 percent of the plants' capacities, removing about 45,000 barrels per day of processing capacity from the market, according to Reuters calculations.

That's a fraction of the 1.9 million bpd that independent refiners, known as teapots, imported in April.

But the measures are the latest setback for teapots as they struggle with shrinking profit margins, new tax rules, tighter regulatory scrutiny and greater competition.

The largest company under orders to slash runs is Dongying-based Haike Group, which has reduced production by 30 percent at its two plants since mid-May, a company official directly informed of the matter said.

The company was told by the Dongying safety regulation bureau to keep the curbs in place until mid-June, he said on the sidelines of an industry seminar in Dongying, a hub for teapots. He declined to be identified because he was not authorized to speak with media.

Haike Group has capacity to process 120,000 barrels per day.

Wudi Xinyue Fuel Co, based in Binzhou, received instructions from the city government to cut production in half for the same period, two company executives with direct knowledge of the plan said. The company processes 6,575 bpd.

Rizhao-based Rizhao Lanqiao Petrochemical Co and Dongying-based Qicheng Petrochemical Co were told by their respective city authorities to reduce crude runs by 30 percent for two weeks starting around June 1, executives at the refineries told Reuters.

They each have processing capacity of just under 10,000 bpd.

Dongying-based Yatong Petrochemical Co also received verbal orders from the city government to curb production, but the authorities did not specify the amount or give a timeframe, a company executive said.

Dongying, Rizhao and Binzhou city authorities did not respond to requests for comment.

It's not clear if other refineries are under similar orders. Widespread cutbacks would likely rattle oil traders, who worry that refinery cuts ahead of the summit could crimp crude demand.

Teapots account for a fifth of China's monthly crude imports, which hit a record 9.6 million bpd in April.

Qingdao authorities earlier announced plans to ban handling of refined oil products, liquefied petroleum gas and dangerous chemicals in early June.

Reporting by Meng Meng and Chen Aizhu; additional reporting by Beijing newsroom; writing by Josephine Mason; Editing by Manolo Serapio Jr.

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Exhibit G

MAY 24, 2018 | 12:03 PM
UPDATED: MAY 24, 2018 | 5:05 PM

Mariner East construction,

operation halted again in Chester County

Judge says pipelines are a risk to public safety

Jon Hurdle

Marie Cusick / StateImpact Pennsylvania

Mariner East 2 pipeline construction crews work in the backyards of homes on Lisa Drive in West Whiteland Township, Chester County, on May 2. Sinkholes that opened in the area prompted the state's Public Utility Commission to order that an existing pipeline nearby, the Mariner East 1, be shut down until it could be determined that the sinkholes didn't threaten its safety. PUC on May 3 approved a re-start of Mariner East 1 which will now be shut down again following a judge's order.

A Pennsylvania judge on Thursday halted construction of Sunoco's two new Mariner East pipelines, as well as the operation of the existing Mariner East 1 pipeline in Chester County's West Whiteland Township, granting an emergency petition by state Sen.

Administrative Law Judge Elizabeth Barnes said in an order that she was persuaded by Dinniman's argument that the pipelines are a risk to public safety in the township, and granted his emergency petition for a halt to construction and operation of the pipelines until the PUC determines that they are safe.

"I find there to be an imminent risk to the public and a need for immediate relief and further study to be done on ME1, ME2 and ME2X for the Commission and its Bureau of Safety Engineers to evaluate before construction should resume on ME 2 or ME2X in West Whiteland Twp. and before a potential catastrophic event occurs on ME 1," the judge wrote in an order issued Thursday after two days of hearings on the Senator's petition earlier this month.

"Additionally, local and state government needs time to create emergency evacuation and notification plans and to educate the public before operations should resume."

Energy Transfer Partners, parent company of Sunoco, blasted the judge's decision, which it said was a "significant departure from the law" and from PUC's due-process procedures. It will ask PUC to review the order.

"The entire energy industry should be concerned about today's order and consider this result when making decisions regarding future capital investments in the state as it upends Pennsylvania's entire regulatory environment," the company said in a statement.

The order reimposes a shutdown on the operation of Mariner East 1 that the PUC ordered in early March after sinkholes appeared at Lisa Drive, a West Whiteland site where the new lines are being built alongside the existing pipeline. The first order was lifted in early May after the PUC concluded that there was no problem with the integrity of the old line.

The new order said: "Sunoco Pipeline L.P. is enjoined from

construction, including drilling activities on the Mariner East 1, 2 and Mariner East 2X pipeline in West Whiteland Township, Pennsylvania until the entry of a final Commission Order ending the formal amended complaint proceeding."

Energy Transfer Partners said there was "no evidence or legal basis" to back up Dinniman's claims and the judge's order.

"Specifically, the safe operation of ME1 was verified through exhaustive geophysical testing and analysis that was verified by the PUC's Investigation & Enforcement division and their experts, which was the basis for the PUC's 5-0 decision to return the line to service," the company said.

Latest blow to the project

For ME1, which was built in the 1930s and has recently been repurposed to carry natural gas liquids, the ruling means the entire pipeline will be shut down even though the ruling refers only to West Whiteland Township, said Nils Hagen-Frederiksen, a spokesman for the PUC.

The order is the latest blow for a pipeline project that has been plagued with technical, environmental and legal problems since it began construction in February 2017. Last summer, construction was temporarily halted by the Environmental Hearing Board, a state court, after multiple spills of drilling fluid into waterways and private land along the 350-mile route across southern Pennsylvania.

Some private well owners in West Whiteland experienced cloudy water last July after the company drilled into an aquifer there.

In January, the Department of Environmental Protection shut down construction for about a month and issued a $12.6 million penalty to Sunoco for continuing spills, saying the company had

Residents along the pipeline route, especially those in the densely populated suburbs west of Philadelphia, say the pressurized natural gas liquids to be carried by the new lines represent a threat to public safety because of their highly explosive nature, which they say is greater than that of traditional natural gas pipelines.

Sunoco insists the lines are safe and meet or exceed state and federal regulatory standards.

But the judge echoed activists' safety concerns, and said Sunoco had not done enough to ensure that residents know how to protect themselves if there's a leak from the line. She accused the company of providing only "boilerplate" information to residents who have asked for specific instructions on how to respond to a hazardous liquids emergency.

She noted that John Zurcher, a pipeline safety expert who testified for Sunoco at the hearing on Dinniman's petition, had been unable to say how people who were unable to run should respond to a leaking vapor cloud.

"All of these facts support a finding that Sunoco has failed to take reasonable efforts to warn and protect the public from danger," she wrote.

The environmental problems added to delays in construction of Mariner East 2 which the company recently said is due for completion in the third quarter. Thursday's ruling is not expected to affect that timeline, the company said.

When operational, the more than $2.5 billion line will carry propane, ethane and butane from southwest Pennsylvania and Ohio to a terminal at Marcus Hook in Delaware County where most of it will be exported.

By reimposing the shutdown of Mariner East 1, the ruling raises questions about the PUC's decision on May 3 to allow it to restart carrying natural gas liquids after a shutdown of almost two months.

But the PUC's Hagen-Frederiksen said the May 3 decision was specific to the West Whiteland neighborhood of Lisa Drive, where the sinkholes appeared starting late last year, and that the commissioners had invited the public to file their own complaints about the project. The order applies to the township as a whole, and is expected to require a re-examination of all the geology that the pipelines go through there.

"Today's order from Administrative Law Judge Barnes is the result of the exact process highlighted by the Commission, which allows citizens to have their voices heard," Hagen-Frederiksen said.

Reaction: A 'great victory' or a 'shocking development'

Dinniman, a Chester County Democrat, welcomed the ruling and said he hopes PUC will now explain how it concluded that there was no threat to the integrity of ME1, an explanation that he said was lacking in the May 3 decision.

"I believe the judge's ruling will force the PUC into a sharing of the information on which it based its decision to continue to allow hazardous materials to go through an 87-year-old pipeline," Dinniman said.

Opponents of the Mariner East project welcomed the ruling and praised Dinniman's initiative.

"The Public Utility Commission's Order provides much needed protection for the public from the dangers Sunoco has inflicted upon communities in Chester County and beyond," said Joseph Otis Minott, executive director of Clean Air Council, which has led

legal challenges to the project. He called the ruling a “great victory.”

Food & Water Watch, another environmental group, said the ruling shows that Gov. Tom Wolf should halt construction of the two new pipelines altogether.

“Today’s decision gives hope to the communities along the pipeline route who have demanded protection from Sunoco’s dangerous and unnecessary pipeline,” the group said in a statement.

But advocates for the pipeline industry and the labor groups that support it said there is no reason to halt the pipelines, which meet rigorous regulation by state and federal agencies.

“Pipeline opponents have shopped the legal system long enough to finally find a judge who is more sympathetic to their cause than the facts,” said Kurt Knaus, a spokesman for the Pennsylvania Energy Infrastructure Alliance.

GAIN, a group that promotes infrastructure investment, condemned the ruling, which it said would undermine confidence in Pennsylvania’s regulatory environment.

“This activist Judge’s decision flies in the face of the extensive testing and review overseen by the Pennsylvania Utility Commission which led to the Commission’s unanimous decision to allow operations of Mariner East 1 to resume just three weeks ago,” it said.

It called the ruling a “shocking development” that risks the loss of billions of dollars in investment for other infrastructure projects.

In her 26-page ruling, the judge said Mariner East 1 had leaked three times in the last year, including on April 1, 2017, in

gas liquids escaped. It took Sunoco 90 minutes to shut the pipeline down. “This is a dangerous quantity of hazardous gas,” she wrote.

In West Whiteland, Sunoco had not done enough to protect water supplies, she wrote, siding with Dinniman.

“Petitioner has shown Sunoco is putting West Whiteland Township’s water supplies at risk by failing to adequately identify, document and avoid drilling through well or aquifer locations underground,” the judge said.

StateImpact Pennsylvania reporter Susan Phillips contributed to this report.

Judge’s ruling

To print the document, click the "Original Document" link to open the original PDF. At this time it is not possible to print the document with annotations.

LINKS

- **Mariner East: A pipeline project plagued by mishaps and delays**
- **Sunoco at PUC hearing: No alternative to building ME2 in West Whiteland Township**

EXPLAINERS

Mariner East: A pipeline project plagued by mishaps and delays

Pipelines: The new battleground over fracking

"Calling the balls and strikes" -- the Public Utility Commission

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Exhibit H

April 17, 2018

By Email

Department of Environmental Protection
Southwestern Regional Office
Waterways & Wetlands Program
400 Waterfront Drive
Pittsburgh, PA 15222
RA-EPWW-SWRO@PA.GOV

Re: Shell Pipeline Company L.P. Joint Permit Applications (Nos. E02-1773, E04-369, and E63-710), and Chapter 102 application (ESG00007170003)

Dear Ms. Drake:

Clean Air Council, Citizens for Pennsylvania's Future, FracTracker Alliance, and Sierra Club, on behalf of themselves, the Breathe Project / Collaborative, PennEnvironment, the Environmental Integrity Project, the Beaver County Marcellus Awareness Community, and Women for a Healthy Environment (collectively, "Commenters") hereby submit the following comments in response to the Pennsylvania Department of Environmental Protection's (the "Department") opening of public comment on Shell Pipeline Company L.P.'s ("Shell") Chapter 105 Joint Permit Applications ("JPAs") and Chapter 102 application ("102 App.") for the proposed Falcon Ethane Pipeline System (the "Pipeline" or the "Project"). Because of the common issues across multiple applications, Commenters have consolidated their comments into this single document.

Commenting Organizations

Clean Air Council is a non-profit environmental organization headquartered at 135 South 19th Street, Suite 300, Philadelphia, Pennsylvania 19103, with more than 7,000 members in Pennsylvania. For more than 50 years, Clean Air Council has fought to improve the air quality across Pennsylvania. Clean Air Council works to protect everyone's right to a healthy environment.

Citizens for Pennsylvania's Future (PennFuture) is a membership-based, public interest, environmental organization whose activities include advocating and advancing legislative action

on a state and federal level; providing education for the public; and assisting citizens in public advocacy. PennFuture is concerned with the protection of Pennsylvania's waters and the conservation of its resources for future generations.

Sierra Club is the nation's largest grassroots environmental organization. Nationally and locally, on behalf of more than 32,000 members in Pennsylvania, Sierra Club advocates a just transition to a clean energy economy. The Project is at odds with this transition. In fact, the Project is part of a plan to spur projects that use climate-disrupting fossil fuels in Pennsylvania and beyond. Sierra Club therefore joins these comments especially to urge the Department to look hard at cumulative impacts, and, so informed, to act consistent with environmental anti-degradation standards.[1]

FracTracker Alliance studies, maps, and communicates the risks of oil and gas development to protect our planet and support the renewable energy transformation. In 2012, it became a 501(c)3 nonprofit and a supporting organization to the Community Foundation for the Alleghenies. Cumulatively, FracTracker Alliance's website, www.FracTracker.org, has been visited by more than 500,000 users since December, 2011.

The Breathe Project / Collaborative is a coalition of citizens, environmental advocates, public health professionals and academics working to improve air quality, eliminate climate pollution and make our region a healthy and prosperous place to live. The Collaborative powers the Breathe Project through science-based work and a community outreach platform. We have 26 organizational members representing thousands of regional citizens.

PennEnvironment is a statewide, citizen-based environmental advocacy organization, and we work to protect our air, water, and open spaces. We have over 100,000 members, activists, and volunteers in Pennsylvania.

The Environmental Integrity Project is a nonpartisan, nonprofit watchdog organization that advocates for effective enforcement of environmental laws. EIP is dedicated to President Theodore Roosevelt's idea that our laws should be enforced in the public's interest "without fear or favor." We believe that all people – rich or poor, no matter where they live – deserve a healthy environment in which to work, play, and raise their children. We help level the playing field by giving communities the legal and technical resources they need to claim their rights under environmental laws.

Formed in 2011 by a band of citizens who had learned about threats to the Ambridge Reservoir posed by fracking, the Beaver County Marcellus Awareness Community (BCMAC) is a 501(c)(3) organization. The organization seeks to inform the citizens of Western Pennsylvania, specifically those in Beaver County, about Marcellus Shale unconventional gas drilling, and to protect our natural environment by promoting and supporting sustainable energy alternatives to carbon-based energy sources. BCMAC has 12 regular steering committee members and a membership of 250+ interested citizens.

[1] Cumulative impacts are discussed in Section 20, *infra*.

Through educational programming, technical assistance and advocacy, Women for a Healthy Environment addresses environmental exposures that impact public health. Our three main program areas are: Healthy Homes, Healthy Schools, and Healthy Early Learning. Since 2010, WHE has educated and empowered over 15,000 individuals across western PA, creating healthy places for children to live, learn and play.

Summary of Comments

Commenters commend the Department for making application materials available online. This has greatly reduced the burden on the public. Commenters also commend the Department for extending the period of time for public comment. The application materials are voluminous and require in-depth technical analysis that could not adequately be undertaken in the original thirty-day comment period.

Commenters comment below on several topics, including that:

- The Ambridge Reservoir watershed should be avoided rather than endangered;
- Other locations exist along the Pipeline route that are not adequately protected in the applications;
- Many of Shell's plans for water crossings do not minimize damage to resources;
- Other site-specific construction plans do not minimize damage to resources;
- The applications set forth plans that violate several regulations;
- The practicable alternatives analysis is inadequate;
- The horizontal directional drilling inadvertent return plan is inadequate;
- It is unclear whether Shell has adequately identified water supplies which may be damaged;
- It is unclear whether Shell has correctly identified wetland types;
- The wetland mitigation plan is inadequate;
- Shell's mitigation plans are inadequate;
- The applications contain additional inaccuracies;
- The land use impacts are significant and not accurately calculated;
- The Department should not grant the requested riparian buffer waiver;

- The Chapter 102 plans are inadequate;
- Threatened and endangered species need more protection;
- The Department should account for significant safety risks; and
- The cumulative impacts of the Pipeline would be excessive.

We conclude that the Department should either deny the applications as technically deficient and inadequately addressing significant concerns to health, safety, and the environment, or require Shell to undertake significant revisions to the construction plans that would address these issues. If these revisions are made, Commenters request a new round of public comments to address these substantial changes. Commenters appreciate the opportunity to submit these comments.

COMMENTS

1. Overall comments

Shell has applied to build the 97-mile Falcon Pipeline to feed the Shell Petrochemical Plant. The Pipeline would traverse 22 townships in Pennsylvania, West Virginia, and Ohio, and come within 660 feet of 550 family homes, 20 businesses, 240 groundwater wells, 12 public parks, five schools, six daycare centers, major hiking and biking trails, and the watershed of the Ambridge Reservoir. More than half of the construction area is currently forested, and another third is farmland.

The Joint Permit Applications (JPAs) and Chapter 102 Application (102 App.) as made available on the Department's website are best understood as works in progress. There are many inaccuracies, deficiencies, and areas where Commenters identify room for needed improvement. Commenters request that the Department either deny the applications as technically deficient or require of Shell this needed correction and improvement and then make the revised applications again available to the public for comment.

Commenters appreciate that the Department will consider these comments as set forth below. Commenters also identify additional material the Department should review: The FracTracker Alliance, one of Commenters, has done a remarkable qualitative and quantitative analysis of risk and impacts from the Pipeline. It is called the Falcon Public Environmental Impact Assessment Project, and it is available through this online portal: https://www.fractracker.org/projects/falcon-public-eia/ Commenters urge the Department to review it in depth and they incorporate it here by reference.[2]

[2] Due to the interactivity and dimensions of the material on that website, it is not practicable for Commenters to include it here on paper.

2. The Pipeline should avoid the Ambridge Reservoir catchment.

There are many locations which the Pipeline would cross that are sensitive and deserve special scrutiny. Commenters identify several of those here. Of particular concern is the Pipeline's crossing of the Ambridge Reservoir Watershed in Raccoon Township. Specifically, the Pipeline is planned to cross 13 tributaries to Service Creek, which feeds to Ambridge Reservoir, as well as crossing the raw water line sourced in the Reservoir. Headwaters of the Ambridge Reservoir would be crossed. *See* Beaver JPA Req. L, Mod. S1.[3]

The Ambridge Reservoir supplies 6.5 million gallons of water a day to five municipalities in Beaver County (Ambridge, Baden, Economy, Harmony, and New Sewickley) and four in Allegheny County (Leet, Leetsdale, Bell Acres, and Edgeworth). This includes drinking water services to 30,000 people. Commenters are aware that Michael Dominick, General Manager of the Ambridge Water Authority that oversees the Reservoir, has testified of the Authority's concerns about the dangers that this placement of the Pipeline poses to the Reservoir. Commenters echo those concerns and incorporate the testimony by reference.

The Reservoir is a gem that Beaver County officials and residents have worked hard to protect from contamination and encroachment by development and gas extraction activities. For example, the Authority has rejected proposals by gas companies for drilling around the Reservoir to maintain its purity. Yet Shell's applications do not acknowledge the presence of the Reservoir or contain any plan to protect it. Stream crossings can lead to spikes in erosion and sedimentation into the downstream flow, especially open-cut crossings. Boring under the streams, if done properly, can better protect water quality in the streams. If done improperly, it can lead to aquifer drainage, permanent damage to the stream, or inadvertent returns into the stream. The Department should require Shell to move the Pipeline out of the Reservoir watershed because it is unlikely that Shell can provide certainty that this vital resource is sufficiently protected from harm due to stream crossings.

Pennsylvania also recognizes the importance for protection of forest cover in headwaters locations such as for the Reservoir headwaters. Headwaters are vital for stream health.[4] Environmental Protection Workgroup Recommendation #29 of the Pipeline Infrastructure Task Force report calls for avoiding net loss of forest in headwaters. Shell has not proposed any avoidance, compensation, or mitigation measures for forest loss in the Ambridge Reservoir headwaters--or elsewhere. If the Department permits Shell to site the Pipeline in the watershed, it should require such a plan.

The applications also do not mention any measures designed to protect against disruption of the raw water line leading from Ambridge, which serves tens of thousands of people. If the Pipeline

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[3] Commenters cite to the Joint Permit Applications as "JPA" and when the material in question is in multiple JPAs, add no modifier. When the material is specific to one county, the county is referenced.

[4] *See* Stroud Water Research Center, *Protecting Headwaters: THE SCIENTIFIC BASIS FOR SAFEGUARDING STREAM AND RIVER ECOSYSTEMS*, attached as Exhibit A, also available at https://stroudcenter.org/wp-content/uploads/2016/12/ProtectingHeadwaters.pdf.

remains in this sensitive location, special, site-specific measures should be taken to provide extra protection against damage to or disruption of the line.

Commenters note that Shell states that:

> The site is not located in or within 100 feet of a national, state, or local park, forest, or recreation area. It is not located in or within 100 feet of a national natural landmark, national wildlife refuge, or federal, state, local or private wildlife or plant sanctuaries, state game lands. It is also not located in or within 100 feet of a national wild or scenic river, the Commonwealth's Scenic Rivers System, or any areas designated as a Federal Wilderness Area. Additionally, there are no public water supplies located within the Project vicinity.

JPA Req. L Mod. S1, p.2. This is misleading, as it gives the impression that these resources are not at risk from the Pipeline. As illustrated by the risk to the Ambridge Reservoir, that is not the case. The Department should not take comfort in this statement.

3. Other notable locations need avoidance or greater protections.

Besides the Ambridge Reservoir, there are other locations that should be brought to the Department's attention. Commenters discuss some below. This is, of course, by no means complete. What is key is that Shell undertake a site-specific analysis looking at the special features and values inherent in the locations where it plans to bury the Pipeline to ensure that these special qualities are preserved. Impact tables and features listed on registries do not tell the whole story. Commenters urge the Department to require this type of deeper analysis.

a. Independence Marsh

The Beaver County Conservation District gave permission to let Shell HDD under its property. This property contains larger wetlands not identified in Shell's applications because they are just outside the work area. These wetlands are part of Independence Marsh, a highly valued nature area established by the Independence Conservancy and now run by the Conservation District. *See* http://www.independenceconservancy.org/about-us. In fact, the Marsh is a *mitigation* marsh, protected to compensate for wetlands lost by the expansion of the Pittsburgh International Airport in nearby Moon Township.[5] The Marsh is open to the public for educational and recreational purposes, and is described by the Conservation District as a "unique habitat." The Conservation District further explains, "The wetland consists of two ponds connected by a channel. A walking trail of about 1.5 miles encompasses both ponds and takes you through a picturesque wooded hillside." The Marsh also contains an archeological site and a canoe launch for recreational activities. Its preservation was the founding purpose of the Independence Conservancy. And its preservation, of course, is crucial to the wetland compensation and mitigation program. If mitigation wetlands are not truly protected, then the program is not doing

[5] *See* Beaver County Conservation District, Environmental Center Classroom, available at https://www.beavercountyconservationdistrict.org/environmental-center-classroom.

its job and the Department cannot rely on it to compensate for wetland loss.

Shell proposes using HDD to cross much of the area. Providing that the HDD is done cautiously and safely, and providing that the geology is suitable, this is an appropriate plan. However, the northern HDD staging area is planned to be built right in the middle of one of the areas of wetland that is part of the Marsh. *See* Beaver JPA Req. H, Resource Crossings Nos. 73 and 74; Req. K, Sheet 38 of 54. This would do great damage to the unique habitat of the Marsh. The applications are devoid of analysis of the impacts at this location. The Department should require Shell to analyze the impacts to the Conservation District land, and consider whether this route is the best option after such an analysis is done.

b. Maronda Farms

The very large, in-progress Maronda Farms housing development in Allegheny County would be bisected by the Pipeline should the plans go forward. Existing home purchasers were not notified of the developer's sale of the easement to Shell, and many are stunned and disturbed to discover it would be going through their new neighborhood and passing very close to their houses.[6] Shell mentions the development in Section S3.F.1 of its Allegheny JPA. The Department should be aware of this development and the high density of existing and future residents living on or very close to the route.

Even besides this particular residential neighborhood, Shell plots the Pipeline right-of-way through or nearby several houses and water wells. Residents should already have been notified about this close passage, and emergency precautions to take in the event of a pipeline accident near their residence. The pipeline should be set back from water wells, and well owners should be notified, especially when HDD is taking place near these wells. In the Erosion and Sediment Control Plan, some of these instances are visible on the following pages: ES017, ES031, ES040, ES053, ES091 ES116, ES134, ES162, ES167, ES190, and ES198.

c. The Montour Trail

The Montour Trail (montourtrail.org), named by the Department of Conservation and Natural Resources as "trail of the year" in 2017,[7] will be crossed nine times by the pipeline and its access roads. These crossings will harm the natural features that attract users of the trail. This is a significant degradation of a natural public resource used by 400,000 visitors every year. The Panhandle Trail would also crossed by the Pipeline.

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[6] Anya Litvak, "What pipeline? Maronda Farms homeowners ask," Pittsburgh Post-Gazette, February 1, 2018, available at http://www.post-gazette.com/powersource/consumers-powersource/2018/02/01/What-pipeline-Maronda-Farms-home-owners-ask/stories/201802010025.

[7] *See* "Montour Trail Named Pennsylvania's 2017 Trail of the Year," DCNR Press Release, dated January 26, 2017, attached as Exhibit B, also available at http://www.docs.dcnr.pa.gov/cs/groups/public/documents/news/DCNR_20032664.pdf.

d. Natural Heritage Inventory Locations

Besides these locations, Pennsylvania Natural Heritage Inventories are available for Allegheny, Beaver, and Washington Counties.[8] Shell should consult these and identify areas that the Project would impact. For example, the Raccoon Creek Landscape Conservation Area would be impacted. How that affects the broader ecological community is a qualitative, location-specific analysis that is missing from the applications.

4. The planned water crossing impacts are excessive.

Commenters have serious concerns about the Pipeline's water crossings plans and the impacts anticipated from them. In several ways, Shell underreports these impacts.

In the PASPGP-5 Reporting Requirements Checklist, the Department asks the question, "Does the proposed work associated with the Single and Complete Project temporarily and/or permanently impact greater than 1.0 acre of waters and/or wetlands, and/or result in the loss of greater than 1,000 linear feet of stream channel(s)?" Shell checks "no" for each county. In fact, this is inaccurate for each county considered individually, let alone the entire Project.

Likewise, the Checklist asks: "Does the application/registration include any proposed Single and Complete Projects permanently impacting greater than 250 linear feet of streams, rivers, or other watercourses (excluding wetlands)?" Shell again checks "no" for each county. Beaver County alone exceeds that, and the "single and complete" Project tallies 931.90 linear feet of stream impacts (119.35 feet in Allegheny, 175.25 feet in Washington, and 637.30 in Beaver).[9]

Finally, the Checklist asks: "Does the application/registration include any Single and Complete Projects that propose the permanent conversion of greater than 0.10 acre of forested and/or shrub-scrub wetlands in association with a regulated activity?" Shell checks "yes" only for Beaver County, though in fact the Single and Complete Project (the Pipeline) has greater than that amount of resource conversion, so the box should be checked yes in each JPA.

The Project also involves permanently filling wetlands and a stream (*see* Table 1, Aquatic Resources Impact Table), including for two Mainline Valve Pad Sites.

Certain watersheds bear a heavy cumulative impact from Pipeline stream crossings. Potato Garden Run in particular is heavily impacted, as are Mill Creek, Raccoon Creek, and Frames Creek. Commenters do not see in the application materials any cumulative impact analysis on waterways assessing the burden of multiple crossings. The Department should require Shell to

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[8] *See* Exhibits C, D, and E, also available at the links below. These exhibits lack cover sheets due to their size and the protected nature of the pdfs.
http://www.naturalheritage.state.pa.us/CNAI_PDFs/Allegheny%20County%20NHI%201994%20WEB.pdf,
http://www.naturalheritage.state.pa.us/CNAI_PDFs/Beaver_CNHI_Update_web.pdf, and
http://www.naturalheritage.state.pa.us/CNAI_PDFs/Washington%20County%20NHI%201994%20WEB.pdf.

[9] This is taken from the "Pipeline or Access Road Crossing Length" column in the Aquatic Resources Impact Table. The figures for "Length of Stream within Permanent Right-of-Way" are significantly higher.

do such analysis, including especially for these watersheds.

Commenters have compiled a list of site-specific water crossing comments, organized by the location in the applications that the Department can refer to:

JPA Requirement H and Aquatic Resource Impact Table

a. *Beaver County, SS089 - Resource Crossing #1*: This is good candidate to consider HDD, as the right-of-way runs through and along wetlands and stream.

b. *Beaver County, SS111 - Resource Crossing #20*: The valve site is planned to sit squarely in the center of a wetland which it would permanently fill. The access road to the valve site would also fill the wetland. The plan makes clear that moving the valve site slightly left as the plan is oriented would avoid the wetland without needing to change the plans significantly. The Department should propose this siting revision.

c. *Beaver County, SS158 - Resource Crossing #67*: The depicted pond spanning nearly the full width of the right-of-way is in danger of being severely damaged by the trench crossing and slope clearing on either side. No streams appear to flow into or out of the pond. The construction will likely cause turbulence and sedimentation in the pond for extended periods of time which may kill the plants and animals which use the pond as habitat. The span crossed by a timber mat may need a full bridge rather than just a mat due to its width, but no bridge is depicted. Furthermore, contour lines run through the pond. It is unclear whether those are meant to describe the depth of the pond, but this might be error. A wetland indicator also overlaps the depicted pond area, which also appears to be contradictory. Given the variety of issues at this location, the Department should require a detailed, site-specific plan with a cleared-up map that adequately protects the pond. This may require adjustment of the right-of-way.

d. *Beaver County, SS164 - Resource Crossing #74*: Tens of thousands of square feet of wetland are proposed to be cleared and occupied for an HDD staging area and a drill pit will be dug fully within the wetland, though the drill pit is omitted from this plan. The Department should press for less harmful alternatives to this siting proposal. This is at Independence Marsh (see discussion above).

e. *Beaver County, SS165 - Resource Crossing #75*: Stream fill is planned due to the placement of a valve site and associated access road. There is no apparent obstacle to the valve site being moved laterally a small amount to avoid stream fill here. The Department should press for such a move.

f. *Beaver County, SS166 - Resource Crossing #76*: The depiction of the timber matting here overlaps the home in the drawing. It is unclear what the actual placement will be. The timber mat also does not cover the span of the wetland that would need to be covered when navigating between the edge of the limits of

disturbance and the home, which is also blocked by orange safety fence. It is hard to see how vehicles will travel past these obstacles. This should be cleared up. Furthermore, there are two water wells and a home within a few feet of where the actual trench must go. It is unclear how this property will be protected. The Department should require Shell to explain and depict in detail what the actual plans for this site are, including protection of all the resources and property.

g. *Beaver County, SS180 - Resource Crossings #91 & #92*: The Department should require Shell to justify why the pipeline could not be adjusted southward to avoid two stream crossings. Also, the left trench plug on the right-hand stream crossing appears misplaced, and there are no trench plugs protecting the left-hand stream crossing.

h. *Beaver County, SS191 - Resource Crossing #102*: The Department should require Shell to justify why the right-of-way could not be adjusted eastward to avoid the convergence of multiple streams.

i. *Allegheny County, SS066 - Resource Crossing #17*: This crossing is of a stream, PEM wetland, and PFO wetland complex. Shell notes, "HDD: This complex is crossed via HDD at a depth ranging 11 to 13 feet." That is very shallow for an HDD crossing, very likely above bedrock and in relatively loose overburden. The likelihood of an inadvertent return in such a crossing is very high, and the stream and wetlands would quite possibly be damaged by that eventuality. Shell should produce a site-specific analysis sealed by a Pennsylvania Professional Geologist of this HDD crossing, including geologic data such as core samples, depth to bedrock, competency of bedrock, water table levels, and the like to evaluate the risk of inadvertent return. If a significant risk exists, the Department should require the use of an alternative plan.

j. *Allegheny County, SS069/SS070 - Resource Crossings #20, #21, & #22*: This trench crossing encompasses a large area of wetland in the right-of-way. The Department should press Shell for alternative locations or methods of crossing, or to narrow and shift the right-of-way to avoid impacts to this wetland.

k. *Allegheny County, SS072 - Resource Crossing #24*: Shell plans to use 0.453 acres of PSS wetland as temporary work space. Based on the plan, this appears to be excessive at this crossing. The Department should probe the necessity and size of this additional temporary work space.

l. *Allegheny County, SS075/SS076/SS077 – Resource Crossing #28*: Shell plans to trench through a large stream and wetland complex, resulting in heavy impacts to these resources. The Department should press Shell for alternative locations or methods of crossing in this area to avoid the large impacts.

m. *Washington County, SS016 - Resource Crossing #15*: Shell plans to trench through what appears to be a headwaters. The Department should require extra

precautions to be taken to avoid disrupting the headwaters.

n. *Washington County, SS034 – Resource Crossing #33*: This trench crossing of a stream / PFO wetland / PEM wetland complex will cause very large impacts to the resources. The Department should press Shell for alternative locations or methods of crossing this area to avoid the large impacts.

o. *Washington County, SS036 - Resource Crossing #35*: Shell plans to trench through 0.241 acres of PEM wetland at this crossing. Based on the plan, this appears to be excessive at this crossing. The Department should probe the necessity and size of this work space.

p. Other candidates for consideration of trenchless crossings include: Beaver Co. Resource Crossings 1, 8A, 10, 15, 16, 19, 23, 29, 30, 35, 50, 69, 80, 88, 100, 102, 103, 104; Allegheny Co. Resource Crossings 10, 28, 30, 32, 33, 34, 35, 36; Washington Co. Resource Crossings 3, 9, 13, 16, 21, 23, 27, 35.

Erosion and Sediment Control Plan, and Post-Construction Stormwater Management / Site Restoration Plan

There are several areas made visible in the plans provided with the Chapter 102 application where an open-cut stream or pond is located directly adjacent to a bore or HDD. If this bore or HDD were to be extended or adjusted by a short distance, the impact to these resources could in some instances be dramatically reduced. In the Site Restoration Plan, Commenters direct the Department's attention to Sheets SR086, SR103, SR134, and SR197.

5. Location-specific construction comments

Commenters have reviewed Requirement K in the JPAs and identified a number of site-specific issues with the path and construction methods of the Pipeline besides those listed above.

As a general matter, however, the aquatic resources identified in Requirement K have little information shown about them. The uses, functions and values, and exceptional value status of the aquatic resources should be added as a layer to these maps to provide needed context.

a. An explanation should be given for the need for access road HOU-TAR-50 given the existence of parallel SCIO-PAR-09, especially since HOU-TAR-50 cuts through several wetlands. If it is merely added convenience / lower cost, the temporary access road should not be permitted. *See* Beaver JPA, Req. K, Sheet 18 of 54.

b. The limits of disturbance at the bend in Beaver JPA Req. K, Sheet 21 of 54 appear needlessly broad on a steep slope.

c. The limits of disturbance in Beaver JPA Req. K, Sheet 28 of 54 contain a long area with no indicated purpose. It is unclear what this is. If it is an HDD pullback area, there should be a convincing explanation of why HDD pullback cannot be

done along the right-of-way at this location.

d. The limits of disturbance in Beaver JPA Req. K, Sheet 29 of 54 overlap what appears to be an existing building, and do not appear to cover the full footprint of the meter station. This should be corrected and resource impact tables adjusted.

e. HOU-TAR-49 in Beaver JPA Req. K, Sheet 50 of 54, appears to be paralleling and on top of a creek. The access road should be adjusted northward to avoid filling in the creek. Also, no resource crossing map is given for the crossing of those creeks by HOU-TAR-49. This should be fixed.

f. A trenchless crossing method may be more appropriate for the sequence of crossings RC-99 through RC-102. *See* Beaver JPA Req. K, Sheet 51 of 54.

g. RC - 24 in Washington JPA Req. K, Sheet 17 of 39 should be done perpendicularly, not roughly parallel as it is now. This takes out a needlessly large area of stream and riparian forest buffer.

h. Erosion control needs special attention at some of these steep slope locations. For example, in Chartiers Township, Washington County, SS05 - Resource Crossing #4, much of the right-of-way is steep slope pooling to a wetland. That could very easily receive heavy sediment load and fill up, especially if Shell deforests the forested slope.

6. Site-specific concerns identified in Chapter 102 permit application

In addition to the site-specific concerns Commenters identified in the maps contained in the JPAs, Commenters have identified additional concern through review of the maps contained in the Chapter 102 permit application. In particular, Commenters address utility crossings and steep slopes.

a. Utility crossings

Utility crossings, and especially crossings of active natural gas or hazardous liquids pipelines, are a special case. The dangers inherent in pipeline crossings are serious, and recognized by the industry. For example, the industry group the Interstate Natural Gas Association of America (INGAA) produces a publication called "Guidance Documents for Construction -- Natural Gas Pipeline Crossing Guidelines."[10] The Guidelines include both procedural and engineering guidance to avoid damage or catastrophe. Commenters are not suggesting that the Department must require Shell to abide by this specifically. However, part of the Department's Chapter 105 review encompasses public safety concerns. *See*, e.g., 25 Pa. Code §§ 105.13(e)(1)(c)(iii), 105.14(a), 105.21(a)(3). A rupture of another pipeline could also easily lead to Clean Streams Law and other violations. Shell's applications do not explain or otherwise make evident what it

[10] The INGAA Foundation, Inc., June 28, 2013, version 1, attached as Exhibit F, also available at http://www.ingaa.org/File.aspx?id=20405&v=1aed587b.

will do to mitigate such risks.

The risks are particularly serious when doing an open-cut crossing of active pipelines. Trenching across an active pipeline, if done improperly, can have catastrophic results. At least in some circumstances, these pipelines can be crossed more safely using trenchless methods which do not carry the same risk of damaging the crossed line. There are also opportunities to reduce impacts to open-cut streams located adjacent to these pipelines by extending the bore or HDD to include passage under these resources.

Shell proposes for Falcon to cross many natural gas and hazardous liquids pipelines. Using the convention of referring to the Erosion and Sediment Control Plan as "ES" and the Post-Construction Stormwater Management and Site Restoration plan as "SR," Commenters note the following such crossings which Shell proposes to open-cut:

- ES pp. 24, 32, 40, 84, 87, 96, 205, and 207;
- ES p. 38, happens right after HDD;
- SR p. 13, 14, 16, 23, 24, 32, 88, 199, 200, 237, and 251;
- SR p. 30, happens next to HDD;
- SR p. 76, next to open-cut stream crossing, both may be convertible to bore;
- SR p. 94, next to open-cut stream crossing, both may be convertible to bore;
- SR p. 158, next to open-cut stream;
- SR p. 197, also private water line open-cut crossing;
- SR p. 250, adjacent to two stream open cuts;
- SR p. 253, next to open-cut stream crossing.

Shell also proposes to cross pipelines by bore at the following locations: ES pp. 20, 25; SR pp. 12, 17, and 36. The Department should require an explanation of what Shell's proposed practices will be to ensure safety at these locations, and an adjustment to Shell's written plans to reflect those practices, if adjustment is needed. The Department should also take a closer look at whether these locations, especially those near other resources such as aquatic resources, would be better crossed through trenchless methodologies.

There are also multiple open-cut crossings of sewer lines throughout the Pipeline's proposed route. *See* ES pp. 103, 129; SR p. 95 (next to open-cut stream). Again, these crossings, if done improperly, could disrupt or damage these lines. There are two points at which the proposed route crosses an active water line via conventional boring. *See* SR pp. 49, 133. This should be avoided entirely when possible, as a disruption of a water supply can adversely impact thousands of residents within the area. As explained above, there is great concern about potential disruption of the Ambridge Water Authority line in particular. The Department should require Shell to explain and justify its crossing locations and protective measures to ensure the public is not harmed.

b. Erosion controls on steep slopes

Clearing and grubbing steep slopes presents a great risk of erosion and sedimentation. Vegetation and especially trees hold slopes together. The terrain Shell proposes to cross contains

a multitude of steep slopes, including many very steep slopes. The steeper the slope, all things being equal, the greater the risk of erosion and landslide.

The following table was compiled using Shell's 102 App. and shows segments of pipeline that would exceed 30° [which is equal to 57.7%] slope. These areas are of particular concern as they are more prone to erosion and harder to build upon. It is important that the Department give these areas particular scrutiny when examining erosion and sediment controls and require the most conservative controls available.

Sock No.	**Location**	**Slope %**	**Slope Length**
086-H	STA: 1010+37 left	74.2	31
086-I	STA: 1010+16 left	66.7	3
089-4	STA 1043+27 right	68.8	32
099-F	STA: 1171+49 left	57.7	52
120-K	STA: 1420+11 left	59.1	22
129-J	STA: 1528+10 left	60	20
134-N	STA: 1591+63 left	58.3	72
147-AE	STA: 90+89 right	58.8	17
169-N	STA: 2322+15 right	78.1	32
182-C	STA: 2482+18 right	69.6	102

7. The application is not in compliance with certain regulations.

Shell has not yet complied with certain regulations requiring inclusion of materials in its applications, as set forth below.

a. Stormwater management plans

25 Pa. Code § 105.13(e)(1)(v) requires that "If a watershed stormwater management plan has been prepared or adopted under the Storm Water Management Act (32 P. S. § § 680.1—680.17), an analysis of the project's impact on the Stormwater Management Plan and a letter from the county or municipality commenting on the analysis shall be included." The Department should require conformity to the letter of the law. There is no reason Shell cannot work closely with townships to receive and submit a letter commenting on the analysis for each applicable municipality.

The Allegheny County townships of Findlay and North Fayette have confirmed that their local stormwater ordinances have been conformed to. Beaver County townships including Greene, Independence, Potter, and Raccoon, have not received letters. Shell states that the reason for this is that the only meter stations are located in Raccoon Township, which does not have an Act 167 Plan, or are located within the boundaries of the Pennsylvania Petrochemical Facility. *See* Beaver JPA Req. O. There is no exception to Section 105.13(e)(1)(v) for townships where the project does not have permanent impervious surfaces installed. The creation of unobstructed linear herbaceous pathways (i.e. pipeline right-of-way) where forest or other absorbent features used to be increases surface runoff and can affect municipal stormwater management needs. Areas of earth disturbance, even those which do not include impervious surfaces, can fall within the scope of municipal stormwater management ordinances. *See*, e.g., letter from West Whiteland Township, Chester County, regarding its ordinance, attached as Exhibit G.[11] Without seeking information from the Beaver County townships the Pipeline would cross, Shell and the Department cannot know what important issues these townships may identify. The Department should require this of Shell.[12]

This same analysis applies to Washington County. As of January 2018, Shell has requested consistency letters from Chartiers, Mount Pleasant, and Robinson townships within Washington County. *See* Washington JPA Req. O. Shell has requested that these letters state that a stormwater management plan analysis is not required. It does not appear that these letters have been received.

b. Hydrologic and hydraulic analysis

In its Application Completeness Checklist, Shell claims that it is not required to submit a "hydrologic and hydraulic analysis." However, 25 Pa. Code § 102.8(f)(4) requires that it submit a PCSM plan including "[a]n identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area." Shell's PCSM Plan, called its Site Restoration, or SR Plan, does not contain such an analysis.

c. Potentially ignored floodway intersects and lack of risk assessment

Shell claims that multiple analyses are not required or applicable in its Joint Permit Application. Among these are the hydrologic and hydraulic analysis (*see* Section 7.b of this comment), stormwater management analysis (and associated consistency letters, *see* section 7.a of this comment), floodplain management analysis, and risk assessment. JPA Reqs. P, Q. It is unclear why Shell would be exempt from these analyses.

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[11] Also available at http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Chester/14%20-%20Act%20167/12%20Att14_Chester_WWhitelandTwp_160209.pdf

[12] Shell has also left unanswered Question 15.0 in the Coordination Information section of the JPAs, asking "Will your project include infiltration of storm water or waste water to ground water within one-half mile of a public water supply well, spring or infiltration gallery?"

25 Pa. Code § 105.13(e)(1)(vi) states: "Floodplain management analysis. If the proposed dam, water obstruction or encroachment is located within a floodway delineated on a FEMA map, include an analysis of the project's impact on the floodway delineation and water surface profiles and a letter from the municipality commenting on the analysis." Shell's excuse for not including a floodplain management analysis is that "[t]here are no permanent impacts located within any floodways delineated on a FEMA map; therefore a floodplain management analysis and consistency letter is not required." JPA Req. P. Section 105.13(e)(1)(vi) says nothing of permanence. Failing to comply with this regulation on the because the impact may not last forever guts the substance of the regulation. Also, as a matter of common sense, linear paths of deforestation along slopes increases runoff and flooding. The New York State Department of Conservation found that to be the case in denying the Constitution Pipeline a Water Quality Certification: "Changes in rain runoff along ROW may change flooding intensity and alter stream channel morphology."[13] Shell notes in its application completeness checklist that its floodplain management analysis with consistency letter is not complete. JPA Section F.

It is clear that many floodways are present throughout the project right-of-way and are crossed by the Pipeline. Many floodways are delineated throughout the maps in the JPAs. JPA Req. K. A slight alteration of route, in some cases within the 100-foot right-of-way, could avoid some of these crossings. Shell admits in its application that the "[p]roject has instances where the pipe and permanent ROW directly cross through the floodway." *See*, e.g., Washington JPA Req. L at 11. The Department should require Shell to comply with the floodplain management regulation.

Moreover, if a floodplain analysis is undertaken, then a risk assessment must also be conducted if certain conditions are met. *See* 25 Pa. Code § 105.13(e)(1)(vii) ("Risk assessment. If the stormwater or the floodplain management analysis conducted in subparagraphs (v) and (vi) indicates increases in peak rates of runoff or flood elevations, include a description of property and land uses which may be affected and an analysis of the degree of increased risk to life, property and the environment.") Due to no floodplain management analysis having being conducted, no risks were found in the floodplain management analysis. JPA Req. Q. A floodplain management analysis should be completed, and a risk assessment should also be completed for the appropriate areas identified in the floodplain management analysis.

8. The practicable alternatives analysis for trenchless construction is inadequate.

Shell's alternatives analysis is contained in the JPAs, Req. L, Mod S3, Section S3.F. There are several problems with the analysis.

The trenchless construction alternatives analysis does not consider the full range of alternatives. Shell proposes a sparing use of trenchless construction methods, with more roads than environmental features being bored under. *See* JPA Req. L Mod S1, Section S1.A.1(ii). Shell writes, "SPLC has chosen open cut trenching over horizontal directional drilling (HDD) or conventional boring for a majority of the proposed resource crossings. Although the use of HDD

[13] NYDEC, Notice of WQC Denial for Constitution Pipeline, p. 4 (Apr. 22, 2016) ("Constitution WQC Denial"), attached as Exhibit H, also available at http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf.

can be utilized to avoid direct impacts to wetlands and in-stream habitats, these construction methods are not always the environmentally preferred alternative." That is accurate. As elaborated on below, the use of methods involving pressurized drilling fluid (such as HDD) carry a risk of inadvertent return, aquifer depletion, and ground destabilization. That risk can be reduced through sound, site-specific geologic and hydrogeologic analysis, and good construction practices. It will not be appropriate for some locations, but it is not clear that Shell has done the analysis of which locations may be well suited for such trenchless crossing methods. Almost none of the HDD crossings are to protect aquatic resources.

HDD is not the only trenchless construction method. In many instances other trenchless construction methods will be environmentally superior. If Shell has undertaken that site-specific analysis, Commenters cannot find it in its applications. Shell notably does not state that conventional boring will not be environmentally superior.

The range of possibilities for boring is also not just limited to conventional boring and HDD. Guided auger bores, cradle bores, jack bores / hammer bores, guided bores, and FlexBor are all varieties of boring which Shell has not discussed.[14] Some of these methods do not require large amounts of water or drilling fluid, do not pressurize drilling fluid, and do not require the amount of heavy machinery that HDD does.

Shell needlessly limits the possible locations for conventional boring by considering conventional boring to not be possible at crossings over 200 feet in length. "The method is generally limited to a maximum length of approximately 200 feet, depending on soil/rock conditions, the diameter of the pipe to be installed, the ground surface topography, the length of the flight auger string, and equipment torque limitations." Another Pennsylvania pipeline project, Mariner East 2, which also passed through Washington and Allegheny Counties, had a different take: "However, with demand for longer installations increasing, the current maximum extent for a CAB [conventional auger bore] installation of a 16" or 20" diameter pipeline is approximately 390 feet."[15] It is unclear why Shell thinks conventional boring can only be done for half the length of crossing as Sunoco. Given this, Shell likely failed to consider conventional boring for many locations where it would be appropriate and environmentally superior. The Department should require Shell to address this.

9. Shell's trenchless construction plans are inadequate.

As noted above, utilizing trenchless construction methods--and horizontal directional drilling ("HDD") in particular--can be key to avoiding and minimizing surface impacts. Nevertheless, if

[14] *See* Sunoco Pipeline L.P. listing of trenchless construction methodologies attached as Exhibit I, also available at http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Summary_of_Order/Para%202%20-%20Exhibit%20A%20-%20Trenchless%20Construction%20Methodologies.pdf.

[15] *Trenchless Construction Feasibility Analysis*, December 2016, attached as Exhibit J, also available at http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/Allegheny/11%20-%20EAF/Encl%20E%20-%20Comp%20Env%20Eval/Part%203%20-%20Alternatives%20Analysis/Appendix%20B%20-%20Trenchless%20Feasibility%20Analysis%20%202016-11-29-FINAL.pdf.

poorly planned or improperly executed, these construction methods can endanger the public and the environment by destabilizing subsurface geology, damaging water supplies, and spurring pollution. Though Commenters strongly believe more consideration should be given to using trenchless crossing methods at additional locations to avoid destruction of waterways and other surface resources, Commenters also have several concerns regarding Shell's proposed use of trenchless methods and the plans for HDD set forth in the Shell Pipeline HDD Procedure ("HDD Plan").

a. Site-specific geology must be accounted for in plans.

Shell has not gathered sufficient data on the geology of sites where it plans to bore or drill. Geophysical and geotechnical surveys must be conducted and incorporated into plans prior to permit issuance so the Department is able to determine whether the proposed use of trenchless methods is appropriate, problems associated with the construction methods can be avoided, and the impacts of the Project are calculated accurately.

If Shells discovers, post permit issuance, an area slated for trenchless construction is not suited for such plans, it will likely attempt to switch to open trenching. This would result in additional surface impacts that were not accounted for during the permit review process. While there is a separate Departmental approval process for such major modifications, that process should be reserved for truly unforeseeable changes to plans. The major modification process should not be a way to get out of submitting complete applications in the first instance, or making impacts appear less than they will actually be in order to gain approval, only to then incrementally reveal the true extent of impacts as the Project proceeds.

Some areas of concern are already discernible from the limited information Shell has presented. A number of the trenchless crossings transect boundaries of different geological formations. Such locations can be particularly vulnerable to faults, fractures, and increased weathering, all of which can serve as preferential pathways for inadvertent returns and can lead to contamination of groundwater and even sinkholes. The Project also traverses limestone in multiple areas and limestone can be vulnerable to sinkholes, voids, and subsidence. Several locations slotted for HDD crossing are areas where limestone formations intersect with other formations. Examples of such crossings include Hornhead Road in Mt. Pleasant Township, Southview Road in Cecil Township, Noblestown Road in Robinson Township, Route 22 in North Fayette Township, and Potato Garden Run Road in Findlay Township. Based on map data submitted with the applications, it seems partial geophysical surveying may be planned for some, but not all of these crossing areas. It is not clear what surveys Shell intends to conduct, when it will conduct the surveys, or even if it still intends to conduct them at all. In any case, the application materials did not include the results of any such survey and commenters have not seen detailed plans for trenchless crossings that reflect the results of such surveys.

Prior to permit issuance, Shell should complete geophysical surveying at all the locations it previously identified for these studies and for any other area where subsurface geology may pose a threat to the integrity of the pipeline, or otherwise put the public, water supplies, or the environment at risk.

b. The HDD Plan is not adequately protective of the public and the environment

A site-specific prevention, preparedness, and contingency plan is not only a necessary tool to ensure problems that may arise during HDD operations are addressed, it is a regulatory requirement. *See* 25 Pa.Code Section 78a.68a(b). Shell's HDD Plan lacks specificity in several areas and does not provide for Department oversight. The HDD Plan is also riddled with errors and sloppy drafting, which calls into question whether this highly significant document is being regarded by Shell with the seriousness it is due. Commenters describe several specific concerns below.

First, Shell has indicated that it will use additives in its drilling fluid slurry to mitigate against inadvertent returns. HDD Plan at 2. This may indeed be an appropriate mitigation measure. However, Shell has also indicated that it is "unable to identify specific L[oss] C[ontrol] M[easure]s and polymers that may be used on the Project," in part because that determination will depend on site-specific geology. *Id*. Shell should be able to give the Department and the public more information about what additives it intends to use at each site as this goes to the adequacy and appropriateness of its mitigation plans. Even if adjustments have to be made later, it appears no effort has been made at this point to assess site-specific vulnerabilities or mitigation. This does not satisfy the regulatory requirement of 25 Pa. Code § 78a.68a(b).

Second, it is critical that Shell have a professional geologist on site during trenchless construction. This is especially true given the extent of discretion Shell is seeking to make important construction decisions in the field. The current HDD Plan does not explain the qualifications of the onsite inspection team or make clear that professional geologist will be available in the field. HDD Plan at 5.

Third, The HDD plan should make clear who on site has stop-work authority in the event of an inadvertent return or other permit violation. The spate of inadvertent returns and other incidents associated with HDD operations for Sunoco's Mariner East 2 pipelines has been attributed in part to ambiguity in the field reporting structure and in particular the ambiguity over who has authority to order construction activities be stopped. In Sunoco's case, it took a month-long construction shutdown and a $12.6 million fine for this issue to be identified. Shell and the Department should learn from Sunoco's mistake and ensure plans for a well-organized field team are in place before permit issuance.

Fourth, the contingency plan for responding to inadvertent returns at "in-accessible locations," contemplates neither cleanup of the inadvertent return nor shutdown of drilling to prevent spread of the uncontained inadvertent return. If there are locations where the terrain is such that inadvertent returns may be inaccessible, Shell should specifically identify such locations and any associated site-specific impacts in the permit applications so the Department can properly evaluate whether the risk of those returns is acceptable. If such inadvertent returns may enter or impact waters of the Commonwealth, including groundwater, they are unlawful and the plans must not be approved. If the Department, with full information, has determined the risk of inadvertent returns at such sites is acceptable, and once construction begins the actual threat of environmental harm is ultimately greater than anticipated, or if an inadvertent return occurs at an inaccessible location not previously identified by Shell, Shell should be required to shut down

drilling operations at that site until the incident is investigated and it is determined to be safe to restart. Currently, Shell plans to "[c]ontinue drilling utilizing a minimal amount of drilling fluid as required to penetrate the formation or to maintain a successful carrier pipe pull back." By approving this approach, the Department would effectively be signing off on limitless spilling at these sites.

Fifth, for all inadvertent returns, regardless of location, Shell intends to make its own calls as to when drilling should be started and stopped after a spill with little or no Department involvement. For spills in uplands and "wetlands and minor waterbody locations," Shell does not intend to stop drilling while it attempts to contain a spill. The HDD Plan does not specify how long these containment attempts -- and the spilling-- will continue. No Department inspection is contemplated for upland spills. For spills in wetlands and minor waterbody locations, Shell references impacts being assessed by a "governing agency," but it is the construction manager who decides when drilling may resume. The protocol for spills in "major waterbody locations" does not provide for a stop to drilling or Department inspection at all; merely for a written explanation to be provided to regulatory agencies if Shell determines cleanup is impracticable. This is a recipe for disaster. As we have seen with Sunoco's construction of the Mariner East 2 pipelines, pipeline companies have substantial incentive to finish construction as quickly as possible and cannot be entrusted with making decisions that might ultimately slow construction in order to prevent harm to the public and the environment without the Department's oversight. Sunoco has had over a hundred inadvertent returns, amounting to tens of thousands of gallons of drilling fluid contaminating wetlands, streams, rivers, and fouling dozens of drinking water supplies. It has taken multiple iterations of Sunoco's HDD Plan and increased Department oversight to slow the spilling. The communities living near this project should not suffer as Shell drags through the same slow learning process. The latest version of Sunoco's HDD Plan has been thoroughly vetted by the Department, industry experts, public advocates, and the Environmental Hearing Board; many aspects of that plan, in particular the protocols for responding to inadvertent returns, should be applied here to better protect the public and the environment.[16]

Finally, Shell's notification procedures are underinclusive and imprecise. Throughout the HDD Plan, Shell refers to "REGULATORY AUTHORITIES" and "permitting authorities" without listing the agencies or contacts. In regard to notification in particular, the HDD plan provides:

> The Shell Representative will notify REGULATORY AUTHORITIES and the appropriate permitting authorities as necessary of the event and proposed response and provide required documentation within 24 hours.

The HDD Plan is a document to be used to guide men and women in the field and should describe precisely who should be contacted and how. It should also describe what notice is necessary and what must be included in the notice. None of this is clear from the current plan. It is clear, however, that notice is needed is more circumstances than currently contemplated by the plan. If there is a loss of circulation or a surfacing of groundwater, the Department and nearby

[16] Horizontal Directional Drilling Prevention and Preparedness and Contingency Plan, April 2018, attached as Exhibit K.

water supply holders should be notified. Currently, Shell only plans to notify regulatory authorities when they discover an inadvertent return that is "beyond" the area of surrounding the exit and entry pits. Notice is needed for all inadvertent returns.

A thorough and thoughtful prevention, preparedness, and contingency plan is needed before these permits can be approved.

10. Shell has not ensured protection of water supplies.

Shell has provided no analysis of how the Project may affect private water supplies. It seems Shell has not even gathered the appropriate data to understand how water supplies might be impacted. In the map files submitted as part of the application, Sunoco lists 20 private water wells. This information appears to come from the PaGWIS system, which is notoriously incomplete and often inaccurate. Field surveying of well locations and landowner outreach is needed to ensure wells are identified and protected.

11. It is unclear whether Shell has properly classified nearby wetlands.

The Department should require Shell to disclose the methodology by which it classifies wetlands using the Cowardin classification system (PEM, PSS, and PFO). Specifically, Commenters are aware that some surveyors do not consider wetlands to be PFO (or, in a parallel manner, PSS) unless tree trunks (or shrubs) are rooted in hydric soils, regardless of whether they are enclosed in canopy. This is contrary to the Cowardin classification system's emphasis on canopy cover. This allows relatively small wetlands in forested areas to be classified as PEM even though their functions and values are those of PFO wetlands. The Department should ensure that Shell is not using such methodology, which is scientifically invalid.

There is reason to suspect that at least in some locations, Shell is using that invalid methodology. To illustrate, wetland W-PA-160311-MRK-001 is labeled PEM. Washington JPA Req. L Mod S2, pt. 1, at page 392. However, aerial photos appear to place it entirely within the forested riparian buffer of the adjoining stream. *Id.* at p. 67 (Figure 2, Page 20 of 40). Elsewhere in Washington County, wetland W-PA-161205-CBA-002 is labeled PEM. *Id.* at p. 665. Aerial photos show this wetland also covered by forest canopy. *Id.* at p. 64 (Figure 2, Page 17 of 40).

If Shell is under-classifying wetlands in this manner, it under-represents the environmental impacts of the project. Perhaps more importantly, it means that the wetland mitigation Shell would need to do would not include misclassified PFO wetlands. Even if the Department were to disagree about the propriety of this classification methodology, it is indisputable that a wetland which is shaded by forest canopy and seasonally blanketed by tree leaves performs different functions and has different values than a true emergent wetland. When these wetlands are deforested by the Project, these functions and values will need replacing. Due to the mischaracterization, they will not be replaced by wetlands covered in forest canopy.

The Department should ensure that Shell is not misclassifying PFO and PSS wetlands, and also ensure that wetland mitigation fully replaces wetlands performing the functions and with the values of PFO and PSS wetlands.

12. The Permittee-Responsible Mitigation Plan is inadequate.

There are areas in which Shell's Permittee-Responsible Mitigation Plan (PRMP) needs improvement.

First, Shell does not propose increasing any wetland acreage as compensation, but instead "enhancing" existing PEM and PSS wetlands to convert them to PFO wetlands. The PRMP, however, does not contain any analysis to determine the impact on the local ecosystem of this conversion. While the addition of PFO wetlands to the existing complex would expand wetland habitat, this conversion requires analysis.

Second, since the wetland to be enhanced has been used as cattle pasture, it is not clear that the protection of this portion of land will not lead to displacement of the cattle and the degradation of other, nearby wetland habitat. The PRMP should contain a displacement analysis to show whether the projected gains may in fact be a wash.

Third, the restoration site is much farther north than the northernmost point in the Falcon project. The landscape and ecology, including ecological stressors, are not the same in the restoration location as along the route of the Falcon Pipeline. While the restoration will benefit the site, the damage done to the landscape in the Pittsburgh outskirts in the unglaciated Allegheny Plateau will not be offset by this plan. The Department should scrutinize whether Shell should undertake a mitigation project more likely to offset the local impacts.

Fourth, the site restoration instrument is not yet executed or finalized. This instrument leaves the possibility for future oil and gas subsurface exploration and maintains coal interests. JPA Req. T, Appendix B. It also leaves in place previous easement rights, which--like this Pipeline--may involve destruction of the features to be protected. Any activity that may disturb or alter the site that involves extraction activities should be expressly prohibited in this agreement to ensure that the mitigation impacts are permanent.

13. Shell's planned mitigation measures raise questions that need answering.

Module S4 of Requirement L sets forth Shell's mitigation plan, separate from the compensatory mitigation plan described above. It raises several questions that need answering.

First, Shell has designed the right-of-way width to be 75 feet in certain locations involving resource crossings rather than 100 feet. This is a good thing. It is limited to certain locations, though, and does not include all locations where resources could be better avoided, as described at more length in these comments above. The Department should inquire with Shell why this cannot be done at more such locations, and also done to protect resources such as intact forest, and not just aquatic and archeological sites.

Next, at S4.B.1(ii), the questionnaire asks for "specific details and plans outlining how impacted resources will be rehabilitated." Shell's answer is not fully straightforward, but appears to be that while site restoration to pre-existing conditions is planned, no rehabilitation will take place. Indeed, later on Shell writes that areas outside the permanent right-of-way "will be allowed to

return to pre-construction conditions." This does not always happen by itself, especially after the level of disturbance seen by pipeline construction. For example, the paths through the woods created by new rights-of-way sometimes become havens for illegal uses such as off-course ATV activity. The loosening of soils in the pipeline trench itself can become a preferred pathway for water movement, altering the hydrology of the area surrounding the right-of-way and changing the ecosystem. Shell should be more active in ensuring the restoration of the surrounding areas rather than simply passively letting disturbed nature take its course.

14. The applications contain other inaccuracies.

Commenters have noticed additional inaccuracies in the joint permit application in addition to the ones described above. Commenters recognize that these inaccuracies may not necessarily belie major issues, but still believe that they should be clarified by Shell.

In the General Information Form, question 13.0, Shell checks "No" as to whether the project will have operational emissions; however, pipelines have valve and meter stations that have fugitive emissions, and those should be included. Additionally, to maintain the pressure of the ethane in the line, there will need to be one or more pumping stations. These stations would produce significant emissions through fugitive leaks, through blowdowns, and, unless they run on electricity, through combustion.

In the same Form, question 18, Shell Checks "No" as to whether the construction or operation will involve treatment, storage, reuse, or disposal of waste. However, the drilling fluid used in HDD is treated and reused in the circulation process, and disposed of after the end of the drilling operations. When inadvertent returns occur, the resulting product is considered an industrial waste which must then be disposed of.

15. The land use impacts would be significant and adverse.

In Section S3.D.3, Shell writes, "The general nature of pipeline projects is that they are temporary in nature." Shell's claims that most of the land use impacts are "temporary" are based on the assumption that it will successfully recreate the wetlands it destroys in a short time frame, and that nature will reclaim all that has been disturbed.

The impacts would last much longer than "temporary" implies. As ecologists know, one cannot obliterate habitat and expect a restoration of it to have the same functions and values immediately, even for emergent wetlands. Shell's argument conflicts with scientific research. Research into restored and native wetlands demonstrates that biogeochemical functions return slowly over *decades*, not within one growing season. A study showed that those functions differed among native wetlands, those restored five years before, eight years before, sixteen years before, and native but logged fifty years before.[17] The federal government's Interagency

[17] P. V. Sundareshwar, C. J. Richardson, Robert A. Gleason, Perry J. Pellechia, and Shawn Honomichl, "Nature versus Nurture: Functional Assessment of Restoration Effects on Wetland Services Using Nuclear Magnetic Resonance Spectroscopy," *Geophysical Research Letters* 36 (2009): L03402, doi:10.1029/2008GL036385, attached as Exhibit L.

Workgroup on Wetland Restoration agrees:

> Like most ecosystems, wetlands change over many years. This is especially true for restored, created, or enhanced wetlands that may take decades to reach a condition close to that of a mature, naturally-occurring wetland. Research on wetlands created from dredged material in the Gulf of Mexico suggests that these wetlands are still changing and maturing 20 years after they were created. Consider monitoring to be a long-term activity, not just something you do for the first year or two. At a minimum, a site should be monitored until it meets all performance standards, which can take from several years to decades.[18]

The impacts to wetlands from pipeline construction are rightfully considered permanent, as they will last at least decades. More likely, however, the impacts will last at least as long as the pipeline is active, as maintenance work is likely to cause re-destruction of the wetlands before they have returned to full native wetland functionality.

The same is true for the impacts to upland ecosystems. Restoration of a healthy ecosystem requires more than simply the dispersal of grass and forb seeds in most instances. To give just one example, many plant ecosystems cannot fully function without symbiotic fungi that naturally grow among the root networks.[19] Disturbance of the soil can disrupt these relationships and hamper attempts to restore the ecosystem. Establishing a restored meadow, for example, may take three to five years of active interventions.[20] This is very different from the passive, "allowed to return to pre-construction conditions" approach proposed by Shell. This is a long-term impact that cannot be considered merely "temporary."

Moving on from the qualitative nature of the land use impacts of the Pipeline, Shell has quantified those impacts in acres. In Washington County, HDD crossings are listed in the Aquatic Resources Impact Table as having no square footage for either temporary or permanent impacts. In contrast, in Beaver and Allegheny Counties they are listed as having permanent impacts but no temporary impacts. The latter is the correct approach and the impact tables and associated fees should be adjusted to reflect the permanent impacts from HDD crossings. Commenters' calculations for the correct totals for each of the counties based on the Table are set forth in the table below:

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[18] Interagency Workgroup on Wetland Restoration: National Oceanic and Atmospheric Administration, Environmental Protection Agency, Army Corps of Engineers, Fish and Wildlife Service, and Natural Resources Conservation Service. *An Introduction and User's Guide to Wetland Restoration, Creation, and Enhancement*, at 43. Attached as Exhibit M and also available at https://repositories.tdl.org/tamug-ir/handle/1969.3/28934.

[19] Koziol, Liz, and James D. Bever. 2017. "The Missing Link in Grassland Restoration: Arbuscular Mycorrhizal Fungi Inoculation Increases Plant Diversity and Accelerates Succession." *Journal of Applied Ecology* 54, no. 5: 1301–1309. https://doi.org/10.1111/1365-2664.12843. Attached as Exhibit N.

[20] Laura Phillips-Mao, "Restoring Your Degraded Grassland to Conservation Meadow," 2017, attached as Exhibit O, also available at https://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/minnesota/mn-restoration-guide-degraded-grassland-to-cons-meadow.pdf.

Impacts in acres	Stream	Wetland	Floodway
Washington County Temporary	0.178	0.869	3.400
Washington County Permanent	0.212	0.881	4.201
Allegheny County Temporary	0.105	0.868	3.700
Allegheny County Permanent	0.181	0.694	4.392
Beaver County Temporary	0.359	1.708	9.768
Beaver County Permanent	0.503	1.386	10.457

16. The Department should not grant the requested waiver of riparian buffer protections.

Riparian buffers are a stream's first line of defense. Trees and other vegetation slow runoff, filter sediment and pollution, and shade the stream so cold-water-loving creatures can thrive. Environmental Protection Workgroup Recommendation #30 in the Final Report of the Governor's Pipeline Infrastructure Task Force called for "plans that result in no net loss of forested riparian buffers."

25 Pa. Code § 102.14 mandates protections for Pennsylvania's vital riparian buffers. In its riparian buffer waiver discussion in its 102 App. Notice of Intent, Shell seeks exemption from subsection (a) of these mandates for areas covered by the Chapter 105 permits which it has not received, and may not yet legally receive, with the following explanation:

> The Project is of a temporary nature, and the site will be fully restored to its pre-existing condition during the term of the permit per Chapter 102.14 (d)(2)(iv) (Commonwealth of Pennsylvania, 2017), with the exception of permanent access roads to mainline valve sites and meter sites. The meter sites themselves will either be located within existing developed facilities or outside of riparian buffer areas, with exception to one valve placed specifically near the Beaver County Conservation District for line integrity and public safety. The project is also a linear (pipeline) project per Chapter 102.14(d)(2)(ii) and disturbance has been minimized to the riparian buffer areas to the extent practicable for construction of the line.

Shell's invocation of Sections 102.14(d)(2)(iv) and (d)(2)(ii) are unavailing. Subsection (d)(2)(iv) provides a waiver of requirements for earth disturbance activities associated with "Projects of a temporary nature where the site will be fully restored to its preexisting condition during the term of the permit under this chapter." The terms of this exemption are not met. First, Shell acknowledges that it is putting in a permanent facility within a riparian buffer area.

Second, the sites will not be fully restored to pre-existing conditions, as many areas will be permanently deforested, including riparian forest buffers. Clearly that provision does not authorize waiver for the Pipeline.

Subsection (d)(2)(ii) is also unavailing. It applies "Linear projects which may include pipelines, public roadways, rail lines or utility lines." The Pipeline is indeed a linear project. However, the Department may only apply this exemption upon "a demonstration by the applicant that there are reasonable alternatives for compliance with this section, so long as any existing riparian buffer is undisturbed to the extent practicable and that the activity will otherwise meet the requirements of this chapter." Even then, it is not automatic; it is discretionary. Setting aside the "otherwise meet the requirements" clause, Shell has not demonstrated that the existing riparian buffer will be undisturbed to the extent practicable, and it has articulated no reason for the Department to exercise its discretion to grant the waiver.

The entire "demonstration" that Shell has offered appears to be the following one sentence: "For special protection (EV, HQ, and/or siltation impaired) water crossings, the LOD within 150 feet of the top-of-bank of perennial and intermittent streams will be reduced to 75 feet wide." Contrast this to Sunoco's Mariner East 2 waiver request, which was an entire separate document.[21] There are plenty of things wrong with the Mariner East 2 waiver request; Commenters are not claiming it is a model request. But it sets forth several measures to reduce disturbance that Shell is not undertaking. Sunoco's plans were to put in two pipelines of larger diameter than the Falcon pipeline for most of its length. If these measures are practicable for Sunoco to take, there is no reason they should not be practicable for Shell to take.

As disturbance minimization measures, Sunoco planned for the following: "The limit of disturbance (LOD) has been reduced to 50 feet wide at all stream crossings within the riparian buffer area where possible adjacent to the stream area required for crossing and construction. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian buffer, the LOD has been reduced to 50 feet wide within 10 feet of the stream banks to limit the proximity of the work areas as per the stream crossing detail from the PADEP manual."[22]

In contrast, (1) Shell is not taking any measures to reduce disturbance at ephemeral stream crossings; (2) Shell is not taking any measures to reduce disturbance at non-special-protection water crossings; and (3) Shell is reducing the LOD to 75 feet rather than 50 feet.

Similarly, for the Atlantic Sunrise Pipeline project, Williams plans to take additional measures to protect riparian buffers beyond those planned by Shell. Williams states that it will:

> Limit routine vegetation mowing or clearing adjacent to waterbodies to

[21] *See* Sunoco "Attachment 6 - Riparian Buffer Waiver Request Pennsylvania Pipeline Project - South East Region: Spread 6," November 2016, attached as Exhibit P, also available at http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/SERO/02%20NOI%20Application/06%20Riparian%20Buffer%20Waiver%20Request.pdf.

[22] *Id.* at 8 ("Demonstration of Minimizing Impacts").

> allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way.[23]

In contrast, Shell has made no similar commitment to protect riparian buffers.

Shell has made no demonstration that these measures that Williams and Sunoco find practicable, and further measures not listed above, are not practicable. Furthermore, Shell has completely ignored protection of riparian buffers in areas where the pipelines would skirt the streams but cross only their riparian buffers at those locations, not the streams themselves. Shell has made no attempt to demonstrate that it has minimized disturbance in these contexts.

For these reasons, the law bars grant of the requested riparian buffer protection waiver.

17. The Erosion and Sediment Control Plan and Post-Construction Stormwater Management / Site Restoration Plan are inadequate.

Commenters have a number of concerns regarding general provisions in the Erosion and Sediment Control Plan ("E&S Plan") and the closely related Post-Construction Stormwater Management/Site Restoration Plan ("SR Plan").

In both documents, Shell asserts there will be "no surficial impacts" to the eleven streams, seven wetlands, and eleven floodways it intends to cross using conventional bore or HDD. While these construction methods can greatly reduce surface impacts, to say there will be no surface impacts is at best an oversimplification and possibly a significant misrepresentation. Additional area needed for pull back and staging areas, the location of that additional area in relation to waterways, associated runoff, and inadvertent returns, can all have surface impacts. Whether a trenchless construction method will effectively avoid surface impacts also hinges on the adequacy of site-specific plans. A more nuanced impact assessment is needed for these crossings.

In all plans, notice requirements should be clear and mandatory. Section 11.2 of the SR Plan provides for notice to the Department in the event Shell finds an inoperative or ineffective BMP during inspection. The drafting of this protocol suggests the notice is optional.

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[23] *See* Williams Atlantic Sunrise Project "Attachment 18 - Transco Project-Specific Wetland and Waterbody Construction and Mitigation Procedures," Section V.D.1 attached as Exhibit Q, also available at http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/AtlanticSunrise/ESCGP-2/ECP/ESCGP2-EnvironmentalConstructionPlan_2017-04-27.pdf.

The E&S Plan provides for pre-construction meetings. Pre-construction meetings are a valuable opportunity for Shell, its contractors who will be in the field, the Department, County Conservation Districts, and landowners to discuss the details of the construction plans for a particular site to ensure that sensitive features are protected and permits conditions are understood and followed. Presently, Shell does not intend to invite landowners to these meetings. This is a mistake for two reasons: First, landowners are often in the best position to know and explain any concerns specific to their property that may have been overlooked in planning process. Landowner participation in pre-construction meetings can help avoid problems later. Second, it is important that landowners are given an opportunity to understand the details of what will be happening on their property and to have their questions answered.

Conservation & Natural Resources Recommendation #21 in the Final Report of the Governor's Pipeline Infrastructure Task Force called for "[r]eseeding a right-of-way (ROWS) corridor with native grasses, legumes, and wildflowers." Shell's SR Plan includes non-native species and also invasive species--at least the Tall Fescue Shell proposes to plant for restoration is on the DCNR Invasive Plant List.[24] Shell should not be replanting with non-native species, and especially not with invasive species. In Section S2.D.2(vi), speaking of wetlands, Shell writes "There is nothing specific in the post-construction restoration plan that outlines how to prevent invasive species from colonizing an area. If invasive species are already present on site, it will be difficult to keep them from recolonizing. However, restoration will be completed with only native plant species which should help cut down on invasive species colonization." The first thing Shell should do to prevent invasive species colonization is remove invasive species from its planting list.

Because the replanting will often occur in forested or other natural areas, the creation of a long linear path planted with non-native species will facilitate the establishment of these species in natural areas, displacing the native ecosystem members. Harmful invasives such as garlic mustard were once planted for erosion control, too.[25] This mistake should not be repeated.

18. Species of concern are not adequately protected.

Commenters have concerns with several aspects of Shell's analysis of threatened and endangered species, which is not adequate to ensure their protection. *See* 25 Pa. Code §§ 105.14(b)(4) & (b)(5), and 105.16(c).

[24] *See* Exhibit R, under "Grasses", also available at http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20033302.pdf.

[25] Debby Kleinstein, "Introduced Species Summary Project, Garlic Mustard (Alliaria petiolata)," available at http://www.columbia.edu/itc/cerc/danoff-burg/invasion_bio/inv_spp_summ/Alliaria_petiolata.html.

a. The application fails to detail impacts of the project on Mill Creek, which serves as habitat for a state species of concern.

Shell proposes to construct a 44-foot Pipeline crossing under Mill Creek and eight Pipeline crossings under an unnamed tributary to Mill Creek in Beaver County. The 2014 Beaver County Natural Heritage Inventory states that "the stretch of Mill Creek, along with the adjacent uplands, supports a sensitive species of concern, which cannot be named [in the Inventory report] at the request of the jurisdictional agency overseeing its protection."[26] The Pennsylvania Natural Heritage Program (PNHP) maintains a list of all species or communities inventoried by PNHP for which there is a conservation concern; the PNHP data is more extensive than the list of species and communities used for environmental review in the PNDI tool. Despite that Shell has received clearance letters from the USFWS, PGC, PFBC, and DCNR, the application does not evaluate whether impacts to the unnamed sensitive species of concern in the Mill Creek riparian habitat have been assessed. Additionally, the application does not propose using trenchless crossing methods to cross under Mill Creek, which is one of Shell's stated methods of protecting sensitive areas.

b. The application fails to provide any data on the adverse impact of Shell's discharge of drilling mud and other pollutants into waters of the Commonwealth.

Shell claims that its use of HDD eliminates any significant impact to sensitive aquatic habitat. However, this statement is not supported by research or technical data in the applications. As the Department has learned, the use of HDD techniques for the construction of pipelines has repeatedly caused the release of pollutants into waters of the Commonwealth—over 130 times for Energy Transfer's Mariner East 2 project alone. Other pipeline projects have experienced similar pollution events. Energy Transfer has quoted the frequency of such "inadvertent returns" as occurring on 50% of HDD operations. The release of so-called "drilling muds" into waters of the Commonwealth has the potential to cause adverse impacts to fish and invertebrates. For that reason, Chapter 78a requires projects using HDD to include contingency plans in an attempt to minimize the adverse impact from these spills. 25 Pa. Code § 78a.68a(b). Shell proposes the use of HDD under streams that contain species of concern and threatened and endangered species. However, the application contains no analysis of the short- and long-term impact on aquatic habitat of the releases that will likely occur. As a result, the application fails to demonstrate that it will not have an adverse impact on aquatic habitat that support species of concern and threatened or endangered species.

c. The application does not properly address the impact of the project on habitat that supports Pennsylvania endangered and threatened species.

The short-eared owl is a Pennsylvania endangered species, and the Northern Harrier is a Pennsylvania threatened species. The PGC identified six areas of known occurrences of these species. In April – July 2016, Shell's consultant studied an area within 1000 foot of the Pipeline workspace. It recorded one short-eared owl observation and 67 Northern Harriers. Shell

[26] Exhibit D, also available at http://www.naturalheritage.state.pa.us/CNAI_PDFs/Beaver_CNHI_Update_web.pdf. This exhibit lacks a cover sheet due to its size and the protected nature of the pdf.

observed that some of the Northern Harriers appeared to be nesting just beyond the study area, but failed to affirmatively identify those locations. In February 2017, Shell notified the PGC that a number of reroutes had occurred that would shift the Falcon pipeline away from a subset of the observed Northern Harrier habitat. However, because Shell did not identify the "nearby" nesting locations of the Northern Harrier locations, it cannot be determined whether the subsequent shift in the pipeline route will impact this additional Northern Harrier habitat. Consequently, the application fails to demonstrate that the project will not adversely impact the habitat of Pennsylvania threatened and endangered species.

d. Protection of bald eagle nest sites

Shell identified three bald eagle nest sites entitled to habitat protection under the federal Endangered Species Act. Two sites, currently not in use but still entitled to protection, are near where the proposed Pipeline crosses the Ohio River. Shell proposes to cross under the river using HDD, which requires staging areas at which there will be substantial earthmoving, noise, and dust generated by the HDD operations.

The USFWS maintains Bald Eagle Guidelines that bar habitat disturbances that may interfere with the ability of eagles to breed, nest, roost, and forage. With respect to the active nest, the USFWS required that there be no tree clearing within 330 feet, no visible disturbances with 660 feet, and no excessive noise with 1,000 feet. Furthermore, Shell must avoid all activities within 660 feet of the nest from January 1st to July 31st that may disturb the eagles, including but not limited to "construction, excavation, use of heavy equipment, use of loud equipment or machinery, vegetation clearing, earth disturbance, planting, and landscaping."

Shell's application shows that the HDD staging area will be located just beyond the 1,000 foot buffer surrounding the Tomlinson Run alternate nest site. Shell's permit application contains no information justifying the assumption that construction and operation of equipment at this site will not cause excessive noise at the alternate nest site. Without any study data associated with this site, the Department cannot conclude that construction of the pipeline will not adversely impact habitat associated with a federally protected species.

e. Data gaps related to Peregrine Falcons

Ironically, Shell's birds of prey studies fail to make any mention of Peregrine Falcons, a Pennsylvania endangered species. Peregrine Falcons nest in cliffs and bridges along rivers throughout Allegheny and Beaver Counties. One known nest is located under the East Rochester-Monaca Bridge just north of the Pipeline's terminus at Shell's ethane cracker facility. While it is unlikely that activities such as tree clearing would affect falcon habitat, other aspects of the Pipeline's construction, such as spilling of drilling mud or ethane releases along Raccoon Creek, may impact falcon populations. The application's failure to discuss these potential adverse impacts means that the Department cannot conclude that the project will not adversely impact Pennsylvania endangered species.

f. Data gaps for federally protected bats

The USFWS notified Shell that the Pipeline would be located within the range of federally protected Indiana Bats and Northern Long-Eared Bats in Pennsylvania and West Virginia and requested Shell conduct a bat "mist net" survey to identify breeding areas. Mist netting involves setting up nylon mesh nets at predetermined locations to capture and document bat populations.

Shell's bat survey was conducted from April to July 2016. While bats are known to live in caves and abandoned mines in winter, the study focused on summer habitats—mainly forests that support roost trees—given that tree clearing from building the Pipeline would be the most likely impact. These forested areas constituted about 27 of the Pipeline's length in the two states. Mist net locations (MNLs) were established at 46 sites along the route, roughly 1/2 mile apart, as shown on the FracTracker map. A later reroute of the pipeline led to setting up four additional MNLs in June 2017.

A total of 274 bats from 6 different species were captured in the study, included 190 Big Brown Bats, 2 Silver-Haired Bats, 62 Eastern Red Bats, 2 Hoary Bats, and 1 Little Brown Bat. 17 Northern Long-Eared Bats were found at 13 of the MNL sites, but no Indiana Bats were captured. Radio transmitters were then attached to the Northern Long-Eared Bats in order to follow them to roost trees. A total of nine roost trees were located, with the nearest roost tree located 318 feet from the Pipeline's workspace.

In January 2018, USFWS stated that, because the Pipeline's construction area is not within 150 feet of a known roost tree during breeding season or within a 1/4 mile of a known year-round hibernation site, that "incidental take that might result from tree removal is not prohibited." However, USFWS also stated that "Due to the presence of several Northern Long-eared Bat roost trees within the vicinity of the project footprint (although outside of the 150-foot buffer), we recommend the following voluntary conservation measure: No tree removal between June 1 and July 31."

Furthermore, the PGC noted in early correspondences that Silver-Haired Bats may be in the region (a Pennsylvania species of special concern). This was confirmed in Shell's mist net study. PGC did not require a further study for the species, but did request a more restrictive conservation measure of no tree clearing between April 1 and October 31.

There are a number of data gaps in Shell's study. First, the study notes that the nearest roost tree is 318 feet from the Project's workspace, but this does not fully represent the likely impact to bat populations. A review of Shell's application shows that the tree mentioned by Shell is just one in a cluster of five trees all within 750 feet of the Pipeline's workspace. By focusing on a single tree, the study potentially misrepresents the total impact of the Pipeline construction on bat habitat.

In addition, tree clearing in this area will be extensive considering its proximity to the Pipeline's juncture in Beaver County that must accommodate a metering pad and access road. Again, the assessment does not account for this additional construction activity.

Another concern is that, while the USFWS letter states the Pipeline is not "within a 1/4 mile of a known year-round hibernation site," the study does not support this conclusion because it did not identify nearby winter habitats. These omissions are noteworthy given the already significant stressors to bat populations in the region, as well as increasing pressure from oil and gas companies to relax standards for protecting endangered bat species.

Furthermore, Shell's mist survey captured one female northern long-eared bat, which was fitted with a transmitter. According to Shell, the bat biologists attempted to locate the bat after it was fitted with a transmitter, but the bat was not located. Despite not locating the female, Shell's consultant expressed its "professional opinion" that the bat was roosting off of the pipeline right-of-way.

Shell's *Mist-Netting Survey Report, Addendum 2017*, authored by Shell's consultant AECOM states the following:

> One northern long-eared bat was captured during the survey, and was fitted with a transmitter and tracked. Telemetry was conducted by Brian Cooper (QBS), and care was taken to seek out terrain features which may have interfered with signal between the transmitter and the receiver unit. Care was taken to listen from high elevations when possible and to explore contour features which may shield the transmitter signal. After seven consecutive days of searching for the tagged bat up to four miles from the original capture location, **AECOM biologists concluded that the bat was most likely roosting on an offline property. AECOM proposes that the Project, barring significant pipeline re-routes, is not likely to adversely affect the Indiana bat**, however, AECOM and Shell Pipeline Company, LP are requesting input from USFWS regarding the presence of northern long-eared bats in the Project area and will need USFWS input and guidance on northern long-eared bat captures related to the Project.

(Emphasis added). The USFWS agreed with this statement, without explanation, in an email on September 1, 2017. Nonetheless, the USFWS recommended a voluntary conservation measure of "no tree removal between June 1 and July 31" due to the presence of several northern long-eared bat roost trees within the vicinity of the project footprint (although outside of the 150-foot buffer). Contrary to this advice, Shell's permit application indicates that the USFWS' clearance has been granted without seasonal tree clearing restrictions.

The Department's regulations require that Shell's application demonstrate that the project will not adversely impact the habitat of a threatened or endangered species. Shell's 2017 mist-net survey demonstrates that the project boundary includes the presence of the long-eared bat. Shell's contractors concluded, based on their inability to track the female captured during the survey, that no bats were captured during the mist-net survey, that the bat must be roosting in area outside the project boundary. This conclusion is unreasonable and entirely without foundation. Shell could not detect the bat's transmitter signal and concluded the bat roosted outside the search area instead of considering the possibility that the transmitter malfunctioned. There was no basis to conclude that there are no bats roosting in trees within 150 feet of the

project area. As a result, Shell's application fails to fulfill its obligation to demonstrate that the project will not adversely impact habitat that supports threatened and endangered species.

The Department must ensure that these data gaps are filled in order to conduct the assessment required by its regulations.

g. Freshwater mussels

The USFWS and PGC identified that Shell's construction plans would likely impact four endangered mussel species: the Northern Riffelshell, the Clubshell, the Rayed Bean, and the Snuffbox. Shell conducted a survey in May 2016 at 16 perennial streams along the route in those Pennsylvania and Ohio, at the request of their state agencies. In Pennsylvania, mussels were found to be present at both of the Pipeline's intersections with Raccoon Creek. Shell's application argues that these locations will not be impacted because it intends to use HDD to cross the Creek. Additionally, the Fish and Boat Commission is not holding Shell to seasonal restrictions for watercourse S-PA-151105-MRK-0001 (ephemeral) and watercourse S-PA-151204-MRK-003 (Service Creek) since it will be crossed via bore. *See* JPA Req. L Mod S2.

However, as noted elsewhere in these comments, the application contains no data that evaluates the impact of drilling mud discharges on mussel habitat. In fact, drilling mud discharges pose a serious threat to mussels. As USFWS explains, "Large amounts of sediment entering streams and rivers can bury gravel and rocky bottoms and smother mussels. Many kinds of mussels cannot live on muddy or unconsolidated sandy bottoms, they need the river bottoms to be rock, gravel, or firm sands."[27] Because such discharges are likely to occur, this lack of data fails to demonstrate that the project will not adversely impact habitat of federally protected species.

19. Pipeline safety needs more attention.

While pipeline safety is jurisdictional to the Pipeline and Hazardous Materials Safety Administration, safety concerns are also part of the Department's review. 25 Pa. Code § 105.14(a) provides that "[a]n application will be reviewed to determine the proposed project's effect on health, safety and the environment, in accordance with prevailing practices in the engineering profession and in accordance with current environmental principles." Several safety concerns require the Department's attention.

First, the Pipeline is planned to be colocated in rights-of-way with other pipelines. On balance and generally speaking, this is a good thing. Colocation generally reduces environmental and social impacts. However, there is a greater need for coordination with the owners and operators of the other pipelines to ensure that construction does not result in damage to those other pipelines which could potentially result in catastrophic leaks and/or explosions. Even within a single company, pipeline builders sometimes do not know the exact location of the other pipelines that their company operates. That has been the case with Energy Transfer's Mariner East 2 pipelines. There have been issues locating Mariner East 1 within the same right-of-way,

[27] USFWS, "America's Mussels: Silent Sentinels," last updated March 12, 2018, attached as Exhibit S, also available at https://www.fws.gov/midwest/endangered/clams/mussels.html.

and the pipeline has been exposed to the surface at several locations, posing a danger for construction work in the area. Four miles of the Pipeline route are co-located with Mariner West--another Energy Transfer pipeline. The Department should require Shell to ensure that it knows precisely where all pipelines within the right-of-way are located before it moves ahead with construction, to avoid threats to life and property.

Next, there are many coal mines in the area, both abandoned and active. FracTracker's independent analysis shows that close to 20 miles of the Pipeline would travel through undermined areas. More than 18 miles run through areas that have been historically surface-mined (some overlapping under-mined areas).

Evidence has shown in other pipelines that shifting ground due to subsidence can compromise pipelines and lead to major accidents. The pipeline should not be routed through active mine lands or areas where underground mining has occurred where subsidence poses a threat to pipeline structural integrity. Mine subsidence caused an enormous explosion on a newly-installed ethane pipeline just across the Washington County border in Follansbee, West Virginia, in 2015. The explosion blasted five acres of trees and melted siding on the nearest house, 2,000 feet away.[28]

The risk from mine subsidence has not been studied in the applications and is perhaps an issue for the Department's mining division. The Department should require a subsidence analysis before permitting the Pipeline in underground coal mine areas. This would not be an unprecedented ask. The Department has asked for such an analysis before Mariner East 2 HDD is permitted in mining areas, such as in Cambria County.[29]

The Montour #1 Mine, for example, is identified as within a couple hundred feet of the planned HDD crossing at Resource Crossing #24 in Mount Pleasant Township, Washington County. Given the tension that a curved pipe installed by HDD deep underground is placed under, and the depth of the installation, a more detailed subsidence and mine void analysis should be conducted at this location.

Finally, there is the broader concern of the closeness of the Pipeline to homes, schools, and other locations where people congregate. Though the easements were not acquired through eminent domain, there are still many people who did not choose to have this near them. Renters, children, employees, homeowners in recently subdivided properties such as Maronda Farms, and others did not elect to spend time close to Falcon. The Pipeline would be a high-volume, high-pressure pipeline to transport ethane. Ethane is a highly explosive natural gas liquid which is

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[28] *See* Andrew Maykuth, "'It got so hot, so quick.' Mariner East foes say a 2015 pipeline blast points to risks," *Philadelphia Inquirer*, February 9, 2018, available at http://www.philly.com/philly/business/energy/pipeline-explosion-2015-atex-mariner-east-me2-risk-assessment-20180209.html.

[29] *See* March 30, 2018 letter from Energy Transfer to Dana Drake, P.E., attached as Exhibit T, also available at http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/HDD_Reevaluation_Reports/Sunoco_Response/Goldfinch%20Lane%20Crossing%20-%20Sunoco%27s%20Response%20to%20DEP%20-%203-30-18.pdf, at Attachment 4, "Coal Mine Subsidence Study."

colorless and odorless. A leak cannot be smelled or seen, and ignition can be triggered by as little as the use of a cell phone or doorbell. While pipeline explosions are rare, as illustrated above with the Follansbee explosion, they can be devastating. The Department should do everything within its power to ensure that the public is protected from the danger of leaks or explosions.

20. The cumulative impacts of the Project combined with other projects would be excessive.

Ultimately, the Department must respect the public's environmental rights under Article I, Section 27 of the Pennsylvania constitution.[30] Section 27's first sentence "implicates a holistic analytical approach . . . to ensure the maintenance and perpetuation of an environment of quality for the benefit of future generations."[31] Section 27's second and third sentences "implicate[] a duty to prevent and remedy the degradation, diminution, or depletion of our public natural resources,"[32] which "are the common property of all the people, including generations yet to come."[33] Stated succinctly, Section 27 conditions government action on special, cumulative impact analysis and environmental antidegradation standards.[34]

Here, the constitutionally-required analysis is missing but paramount, because the Project is part of a plan to "develop and use Appalachian shale gas and natural gas liquids"[35] (the "Plan")—a plan that would exacerbate the cumulative problem of climate change.[36] Barring any doubt,

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[30] Section 27 provides: The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people." Pa. Const. art. I, § 27.

[31] *Robinson Twp. v. Commonwealth*, 83 A.3d 901, 951 (Pa. 2013) ("*Robinson*").

[32] *Id*. at 957.

[33] Pa. Const. art. I, § 27.

[34] The requisite analysis includes but is not limited to the analysis prescribed by the Department's policy titled "Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications," Document No. 310-2137-006 ("CEA Policy"). *See Robinson*, 83 A.3d at 953 (regarding air and water, constitutional protection and statutory protection are not necessarily coextensive); *see also id*. at 959, n. 46 ("In undertaking its constitutional cross-generational analysis, the Commonwealth trustee should be aware of and attempt to compensate for the inevitable bias toward present consumption of public resources by the current generation, reinforced by a political process characterized by limited terms of office." [citations omitted]).

[35] Tri-State Regional Cooperation Agreement, "Agreement to Enhance Regional Cooperation and Job Growth through the Continuing Development of Shale Gas in the Appalachian Basin," ("Plan") Oct. 13, 2015, amended March 15, 2018, attached as Exhibit U, also available at http://www.governor.ohio.gov/Portals/0/pdf/AchievementEverywhere/Tri%20State%20Shale%20Regional%20Cooperation%20Agreement%20FINAL%20100915.pdf.

[36] *See* White House Council on Environmental Quality, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy

courts have recognized that "climate change is happening[,] . . . human activity is driving it," [37] and, in any event, that "the exploitation of the Marcellus Shale Formation will produce a detrimental effect on the environment, on the people, their children, and future generations, and potentially on the public purse, perhaps rivaling the environmental effects of coal extraction."[38] But the Plan ignores this reality.

In fact, the Plan does not even acknowledge the constitutionally-required threshold inquiry: whether the environment and local communities can sustain the impacts, including climate impacts, of implementing the Plan. Rather, the Plan assumes its implementation can be accomplished in an "environmentally responsible manner"[39]—contrary to law and history. Thus, the Plan includes "one or more petrochemical complexes within the region" as well as multi-billion-dollar changes to "road systems, rail lines, *waterways*, processing centers, and transmission lines"[40]—all to "maximize" projects that use climate-disrupting fossil fuels in Pennsylvania and beyond.[41]

Shell perpetuates the omission of the constitutionally-required inquiry into cumulative impacts. Its applications fail to mention the Plan, much less analyze the impacts if both the Project *and* the Plan were to proceed. But Pennsylvania law requires that analysis for good reason: successive rounds of extraction projects have already degraded the environment.[42] Section 27 conditions Department's action on cumulative impacts analysis, lest another round of extractive projects proceeds to violate environmental antidegradation standards again.

Act Reviews, Aug. 1, 2016, at 17 ("All [greenhouse gas] emissions contribute to cumulative climate change impacts."); *see also* U.S. Global Change Research Program, Climate Science Special Report: Fourth National Climate Assessment, 2017, available at https://science2017.globalchange.gov/ ("Fourth Assessment") ("Without major reductions in [greenhouse gas] emissions, the increase in annual average global temperatures relative to preindustrial times could reach 9°F (5°C) or more by the end of this century," with disastrous consequences.).

[37] *Juliana v. United States*, 217 F. Supp. 3d 1224, 1234 (D. Or. 2016).

[38] *Robinson*, 83 A.3d at 976; *cf.* Environmental Integrity Project, "Greenhouse Gases from a Growing Petrochemical Industry," Feb. 29, 2016, at 1, attached as Exhibit V, also available at https://www.desmogblog.com/sites/beta.desmogblog.com/files/Petrochemical%20Industry%20Pollution.pdf (proposed or permitted petrochemical projects in the U.S. in 2015 were expected to emit about 86 million tons of greenhouse gases per year, equivalent to 19 coal-burning power plants).

[39] Plan, supra n. 33. at 2.

[40] *Id*. at 3 (emphasis added).

[41] *Id*. at 2.

[42] *See Robinson*, 83 A.3d at 960-62, 971 (reciting destructive history of Pennsylvania resource extraction); *see also id.* at 976 (regarding Commonwealth government action on gas extraction, noting "history seeming to repeat itself").

a. Pennsylvania law requires full disclosure of cumulative impacts.

Several undersigned organizations and distinguished Professor John C. Dernbach of the Widener University Law School Environmental Law and Sustainability Center have briefed the Pennsylvania law of cumulative impacts as applied to individual pipelines,[43] and a similar plan to spur the use of climate-disrupting fossil fuels.[44] As the briefing is already on file with the Department, we do not repeat it here. Rather, we incorporate it by reference and assume the reader's familiarity with the Department's duty to review cumulative impacts of a project as a whole, and combined with other projects.[45] We likewise assume familiarity with applicants' corresponding obligation to submit cumulative impacts analysis for Department review.[46]

We do however underscore one recent development in the law governing this matter: In *Pennsylvania Environmental Defense Foundation v. Commonwealth*, 161 A.3d 911, 931 (Pa. 2017) (*PEDF*), a majority of the Pennsylvania Supreme Court re-affirmed that the Commonwealth government is trustee of public natural resources under Section 27,[47] and that the public trust provisions (i.e., the second and third sentences) of Section 27 are self-executing.[48] As such, the Court was clear: government action should be measured against private trust law principles at the time of Section 27's enactment in 1971.[49] Those fiduciary duties include prudence, which requires "comprehensive investigation."[50]

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[43] *See*, *e.g.*, Clean Air Council et al, Petition for Supersedeas, Feb. 14, 2017, EHB Docket No. 2017-009-L, available at http://ehb.courtapps.com/efile/documentViewer.php?documentID=36027.

[44] *See* Joint Comments on Governor's Pipeline Infrastructure Task Force Draft Report, Dec. 29, 2015, available at https://www.sierraclub.org/sites/www.sierraclub.org/files/blog/2015%2012%2029%20Filed%20Public%20Interest%20PITF%20Comments.pdf.

[45] 25 Pa. Code § 105.14(b)(14).

[46] CEA Policy (citing 25 Pa. Code §§ 105.13(e)(1)(x), 105.18a(a)(6) and 105.18a(b)(6)).

[47] *PEDF*, 161 A.3d 911 at 931, n.23 ("Trustee obligations are not vested exclusively in any single branch of Pennsylvania's government, and instead all agencies and entities of the Commonwealth government, both statewide and local, have a fiduciary duty to act toward the corpus with prudence, loyalty, and impartiality.") (citations omitted).

[48] *Id.* at 931.

[49] *Id.* at 931-32.

[50] *Id. at* 932-33 (citing cases); *see also In re Dickinson's Estate*, 179 A. 443, 444 (Pa. 1935) (trustee not liable for loss caused by the Great Depression; had *inter alia* undertaken "comprehensive investigation"); *In re Bartol*, 38 A. 527, 528; *In re Shinn's Estate*, 30 A. 1026, 1029-30 (Pa. 1895) (trustee properly surcharged for failing to demonstrate prudence when he engaged in speculative ventures and failed to seek advice about the sagacity of the proposed action except from those who would agree with and benefit from the venture).

b. Shell failed to disclose the cumulative impacts of the Project as a whole.

Here, Shell's applications omit the requisite information on the cumulative impacts of the Project as a whole—an omission that certainly includes but is not limited to curing the information gaps on direct and secondary (i.e., indirect) impacts discussed in our foregoing comments. Such impacts also must be aggregated, and the significance of the aggregate impacts disclosed.

For example, the applications for Allegheny, Beaver, and Washington Counties state that the "Total Disturbed Acreage" from the Project in those counties will be 110.12 acres, 305.39 acres, and 192.47 acres—or nearly 608 acres overall. However, based on a fastidious review of Shell's own data and other public sources, FracTracker estimates more than twice as much total disturbed acreage, 1,273 acres for construction space and another 650 acres for the permanent right-of-way. To be sure, the Department needs a complete and accurate accounting of total disturbed acreage. But the Department also needs to know whether public natural resources can sustain so much disturbance. That is the point of cumulative impact analysis. Since Shell failed at the first step to fully account for the disturbance, Shell never did nor could reach the second step of meaningful analysis. This must be fixed.

Likewise, Shell's applications say next to nothing meaningful on the Project's cumulative impacts to wetlands. Rather, Shell makes unsubstantiated assertions that best management practices in pipeline construction in wetlands will yield "minimal impacts."[51] This is contrary to the evidence of significant adverse construction and operation impacts from past pipeline projects where applicants were required to adopt best management practices.[52] But Shell never acknowledges this evidence, much less the interaction between construction impacts and other impacts that may cumulatively degrade wetlands. Therefore, the Department should require additional, accurate information from Shell on the Project's aggregate impacts, including detailed data and analysis of the following:

- Sediment pollution,
- Erosion,
- Loss of macroinvertebrate and fish spawning habitats,
- Impacts to wildlife,
- Adverse effects to wetlands, marshes and vernal pools including alteration of vegetation and increased algae growth due to sediment disturbance,
- Permanent removal of riparian and upland vegetation,
- Loss of forest, forest fragmentation, changes in forest ecology and increased edge effect,
- Soil compaction,

[51] *See*, *e.g.*, Allegheny Req. L Mod S3, at 12.

[52] For example, in 2017, one interstate gas pipeline "caused point source discharges of sediment-laden storm water" to waters of Ohio as a result of construction activity. At least 18 such events were documented that violated water quality standards. One of these events involved several million gallons of drilling fluid discharged into a high quality Category 3 wetland. *See* Complaint for Injunctive Relief and Civil Penalties ¶ 47, 49, 82, *State of Ohio v. Rover Pipeline, LLC*, No. 5:17-cv-02566 (Ohio Ct. Com. Pl. Nov. 3, 2017), available at http://www.ohioattorneygeneral.gov/Files/Briefing-Room/News-Releases/Environmental-Enforcement/2017-11-03-Rover-Complaint-Signed-for-Filing.aspx..

- Increased surface water runoff,
- Reduced groundwater recharge,
- Reduced nutrient cycling capacity and increased algae growth,
- Release of hydrocarbons from heavy equipment leaks and re-fueling,
- Thermal impacts, including from climate change,
- Redirection of groundwater and surface water flows,
- Release of drilling muds,
- Creation of sinkholes,
- Air pollution resulting from methane and other air contaminants,
- Failure of remediation/mitigation efforts including efforts to revegetate construction zones,
- Increased acidification of streams from methane pollution and construction equipment and potential decreased buffering capacity of waterbodies,
- Impacts to recreation, aesthetics, property values and property rights, and
- Impacts to health, safety and the environment.

Further, the Department needs data and analysis from Shell regarding the Project's impacts to *other public natural resources* besides wetlands. For example, as FracTracker demonstrated through its own data gathering and visualization, the Project's *direct* impacts alone encompass wide-ranging threats to 12 public parks within the Project's potential impact radius. Without more data and analysis from Shell, the Department cannot analyze whether these parks can sustain such impacts.

In particular, the Department needs data and analysis from Shell on secondary impacts that the company's applications inexplicably ignore. For example, Shell denies the Project "hav[ing] anything to do with a well related to oil and gas production."[53] This is flatly wrong. It is contrary to the undisputed Project purpose of transporting ethane, a byproduct of drilling for oil and gas at nearby wells, and contrary to Shell's statement elsewhere that it is "proposing to conduct oil and gas activities."[54] It is also self-evident that during the multi-decadal life of the Project many wells would be exploited to meet its ethane supply needs. Such exploitation will have significant impacts on the environment, as the Pennsylvania Supreme Court has observed.[55] Moreover, regulations to reduce, for instance, water impacts from oil and gas drilling are either in litigation (unconventional wells) or yet to be developed (conventional wells). Therefore, it is all the more prejudicial that Shell has ignored the secondary impacts of the Project sourcing ethane from Marcellus oil and gas wells. Such ignorance cannot stand.

The Department should require Shell to provide meaningful analysis of the Project's direct and secondary impacts to public natural resources.

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[53] *See* Allegheny JPA Req. A-1, 5, Beaver JPA Req. A-1, 5; *but see* Washington JPA Req. A-1, 5, answering "yes" to Question 3.0 of the General Information Questionnaire.

[54] 102 App. Notice of Intent, "Riparian Buffer Information."

[55] *Robinson*, 83 A.3d at 976.

c. Shell failed to disclose the cumulative impacts of the Project combined with other projects.

Shell likewise must provide meaningful analysis of the cumulative impacts of the Project combined with other projects. This is particularly important here, where the Project is part of the Plan to spur projects that use climate-disrupting fossil fuels—above and beyond the unprecedented growth in such projects in recent years.

That there has not yet been a government-led comprehensive review of the Plan[56] is no excuse, but all the more reason to undertake the review now. Indeed, more than three decades ago the nation's lead authority on environmental review, the White House Council on Environmental Quality, underscored that a hard look at cumulative impacts may very well be the most important form of environmental review:

> Evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time.[57]

Since then cumulative environmental problems have grown worse,[58] underscoring the need for government action, predicated on cumulative impacts analysis, to uphold environmental antidegradation standards before it is too late.

Yet here, Shell fell far short of the mark. Regarding other projects, Shell's applications merely identify "former strip mine habitat" and multiple abandoned mines near the Project,[59] as well as "one 12-inch nitrogen line and one 24-inch natural gas line that are both proposed to connect to

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[56] *Cf.* Pennsylvania Dep't of Conservation and Natural Resources, Shale-Gas Monitoring Report, Preface, 2014, available at http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20029147.pdf (acknowledging report on shale gas impacts was first of its kind, not comprehensive, and not funded for supplements).

[57] White House Council on Environmental Quality, "Considering Cumulative Effects under the National Environmental Policy Act," at 1, available at https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf.

[58] *See* Science 01, May 2015, Vol. 348, Issue 6234, pp. 571-573, DOI: 10.1126/science.aaa4984 , available at http://science.sciencemag.org/content/348/6234/571/tab-pdf ("Extinction risks from climate change are expected not only to increase but to accelerate for every degree rise in global temperatures."); *see also* Interagency Working Group on the Social Cost of Greenhouse Gases, "Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis," 2016, available at https://www.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf (updating tool "generally accepted in the scientific community," per 40 C.F.R. § 1502.22(b)(4), for estimating outsized social costs of greenhouse gas emissions and resulting climate impacts).

[59] *See*, e.g., Allegheny JPA Req I, Mod S3 at 21.

the Plant near the proposed Project connection location."[60] Shell adds, "[t]here is a possibility that in the future after the Project is constructed other pipelines will connect to it. However, at this time, that information is unknown."[61] These statements are insufficient, internally inconsistent, and unreliable, given Shell's tack of segmenting the Department's review of this Project and Shell's own, connected ethane cracker project.

First, regarding the presence of mines, Shell concludes: "Where deep mines were initially thought to be located along the route at the HDD locations, these areas were confirmed with the soil boring data."[62] Further, with respect to the former strip mine in the Project's Allegheny section, Shell concludes, it was "unable to determine the cause of the change or if the watercourse was in the process of being restored to re-mining conditions; as a result it will still be considered impacted under this permit."[63] Nowhere does Shell disclose the potential adverse impacts of its chosen route in the vicinity of these mines. Nor does Shell provide side-by-side comparison of such impacts along route alternatives. Also, the information Shell does provide about the mines along its chosen route appears to underreport the extent of existing or potential expansions of mines, as explained in FracTracker's Environmental Impact Assessment.[64] Such omissions need to be fixed.

Second, regarding other projects, besides mines, Shell at once claims that it is only aware of two gas lines that are proposed to connect to its ethane cracker, but also acknowledges that the Project directly crosses many other existing rights of way for pipeline and transmission lines.[65] Such inconsistencies need to be fixed and the applications supplemented with analysis of habitat fragmentation, sedimentation, safety, and other impacts of so many open corridors.

Third, regarding other petrochemical projects, Shell's claim of ignorance requires special scrutiny, given Shell's failure to disclose its own petrochemical projects in the past. Specifically, in the company's applications for the ethane cracker project that is directly connected to the Project, Shell did not discuss the impacts of the Project. Yet at the time of the applications for the ethane cracker project, Shell's work on this Project was well already underway.[66] Such piecemeal environmental review must not recur.

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[60] Allegheny JPA Req I, Mod S1 at 4.

[61] Allegheny JPA Req I, Mod S3 at 21.

[62] Beaver JPA Req I, Mod S3, at 27.

[63] Allegheny JPA Req I, Mod S3 at 21.

[64] Available at https://www.fractracker.org/2018/01/falcon-cumulative-development/.

[65] Allegheny JPA Req I, Mod S3 at 15.

[66] Anya Litvak, "Building a pipeline, one landowner at a time," *Pittsburgh Post-Gazette*, Jan. 29, 2018, available at http://www.post-gazette.com/powersource/companies/2018/01/29/Building-a-pipeline-one-landowner-at-a-time/stories/201801290013.

Accordingly, the Department should require Shell[67] to catalog all existing and foreseeable projects in the area, especially those that use climate-disrupting shale gas and gas liquids.[68] To be clear, this catalog should include projects regardless of whether Shell or its affiliates have an interest them. Further, this catalog should include projects in early planning stages. Then, based on this catalog, the Department should require Shell to analyze the cumulative impacts of the Project together with other projects. This analysis should include cumulative aggregate greenhouse gases and climate impacts in Pennsylvania.[69]

d. Pennsylvania law very likely bars the Project due to its excessive cumulative impacts.

If the Department is to respect the public's constitutional environmental rights, then the cumulative impacts analysis discussed above must be completed and independently verified by the Department—before the Department acts on Shell's applications. The point of such pre-action analysis is to inform action that upholds environmental antidegradation standards. Here, the analysis will reveal that the Project combined with other projects would exacerbate climate change[70] and other environmental harms suffered by Pennsylvania communities.[71] To be sure, these harms are already excessive because efforts to remedy them are outmatched by existing climate-disrupting fossil fuel projects. Therefore, environmental antidegradation standards very likely bar the Project.

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[67] Shell likely has amassed far more information on such projects than what the company disclosed in its applications. And in any event Shell has a clear interest in tracking such projects, for instance, to gain insight into potential synergies or competition that may impact the value of Shell's projects.

[68] Due to the transboundary nature of climate change and other adverse environmental impacts, it would be prudent to include projects beyond Pennsylvania. An illustrative list of projects is enclosed as Exhibit W.

[69] Because individual contributions to climate change are so small, but the cumulative problem is so large, meaningfully disclosing the impact of greenhouse gas emissions requires some tool beyond merely identifying physical changes in the environment attributable to an individual project's emissions. The most appropriate tool is the protocol developed by the Interagency Working Group on the Social Cost of Greenhouse Gases.

[70] *See*, *e.g.*, Pennsylvania State University Environmental and Natural Resources Institute, Pennsylvania Climate Impacts Assessment Update (May 2015), at 6, available at http://marcellusprotest.org/sites/marcellusprotest.org/files/2700-BK-DEP4494.pdf ("Pennsylvania has undergone a long-term warming of more than 1°C (1.8°F) over the past 110 years . . . ."); *see also id*. at 159 ("[R]ecent change trends strongly support previous predictions of higher flooding potential in the state due to higher precipitation . . . [E]xtreme flows have become more extreme in much of the state . . . .")

[71] *See*, *e.g.*, Concerned Health Professionals of New York and Physicians for Social Responsibility, "Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking" (Unconventional Gas and Oil Extraction), Fifth Edition (2018), attached as Exhibit X, also available at: http://www.psr.org/assets/pdfs/fracking-compendium-5.pdf (documenting harms from fracking).

CONCLUSION

For the reasons set forth above, Commenters respectfully submit that the Shell Chapter 102 and Chapter 105 permit applications for the Falcon Ethane Pipeline are not in a state where they can be approved. Should the Department decide not to reject Shell's applications at this stage, Commenters respectfully request that the Department restart the public comment period only after Shell corrects and completes its applications. The public should have the opportunity to comment on *full* permit applications. Please take these comments into consideration when evaluating the next steps.

Thank you for the opportunity to comment. Please keep us apprised of any future actions related to Shell's applications for these permits.

Sincerely,

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Exhibit I

Climate Change Means More Fuel for Toxic Algae Blooms

By Andrea Thompson

Published: July 27th, 2017

For two days in early August 2014, the 400,000 residents in and around Toledo, Ohio, were told not to drink, wash dishes with or bathe in the city's water supply. A noxious, pea green algae bloom had formed over the city's intake pipe in Lake Erie and levels of a toxin that could cause diarrhea and vomiting had reached unsafe levels.

The bloom, like the others that form in the lake each summer, was fed by the excessive amounts of fertilizer nutrients washed into local waterways from surrounding farmland by spring and summer rains. Efforts are underway around the Great Lakes — as well as other places plagued by blooms, like the Gulf of Mexico and Chesapeake Bay — to reduce nutrient amounts to control the blooms, which can wreak havoc on the local ecology and economy.

The sickly green color marks a toxic algae bloom in the western part of Lake Erie in August, 2014. The bloom caused the city of Ohio to temporarily ban drinking water from the city supply, which is pulled from the lake.
Click image to enlarge. *Credit: NASA Earth Observatory*

But new research shows that climate change is going to make those efforts more and more difficult. As warming temperatures lead to increases in precipitation, more nitrogen, one of those nutrients feeding the blooms, will be washed into the nation's waterways, the work, detailed in the July 28 issue of the journal Science, finds.

The biggest increases in such nitrogen loading will likely come in the Midwest and Northeast, areas already seeing the biggest uptick in heavy downpours.

RELATED **Warming Could Mean More Algae Blooms Like Florida's West Coast Waters on Acid Trip; Fishing Industry in Peril**
Hot Oceans Are Killing Coral Reefs Around the World

The findings show the urgency of coming up with policies to reduce nutrient overloads, and the importance of keeping climate change in mind when devising them.

"It really drives home the point that we need to do something now," Tim Davis, who studies algae blooms at the Great Lakes Environmental Research Laboratory, said. He was not involved with the study.

Costly Blooms

Algae blooms are vast mats of microscopic organisms that, like plants, need sunlight, water, and nutrients to flourish. When an overabundance of nutrients like phosphorous and nitrogen from fertilizers are washed into lakes and coastal areas by rains, they can cause an explosive burst that forms a bloom.

Such blooms form each year in the Great Lakes, particularly in shallow Lake Erie, the Gulf of Mexico and Chesapeake Bay, as well other areas. They can pose serious risks to public health from the toxins they release and can be poisonous to marine and lake life. When a bloom finally dies, it can also suck up all the oxygen in the water, creating what is called a hypoxic, or dead zone, that can also kill fish.

A dead fish washed ashore by the green-tinged waves of Lake Erie during a 2009 algae bloom.
Click image to enlarge. *Credit: Tom Archer/Michigan Sea Grant*

The impacts can have major economic ramifications, causing billions of dollars in damage to commercial fishing and recreational activities.

Nitrogen in particular plays a key role in fueling coastal algae blooms, and has been found to make the blooms in Lake Erie more toxic.

Most research to date on how changing climate conditions might affect algae blooms has been focused on particular basins and watersheds. The Great Lakes, especially Lake Erie, have been the focus of intensive study and the subject of a longstanding effort by the U.S. and Canada to reduce nutrient loads into the lakes.

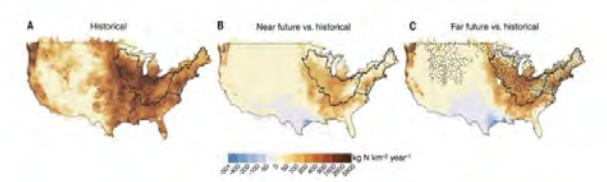
Because not every area can get that kind of attention, Anna Michalak, of the Carnegie Institution for Science, and her colleagues wanted to get a bigger picture look at how climate change might alter how much nitrogen is washing into the nation's watersheds and see if they could pinpoint the areas of greatest risk.

More Rain = More Nitrogen

Using 21 climate models from the most recent Intergovernmental Panel on Climate Change report, they looked at how changes in both overall and extreme precipitation would influence the amount of nitrogen entering waterways, keeping things like fertilizer use constant.

They found that by the end of the century, if greenhouse gas emissions continue on their current trajectory, increased rainfall will cause a 20 percent rise in the amount of nitrogen loading in waterways of the continental U.S.

The largest increases were in the Northeast (with a 28 percent increase in nitrogen), the upper Mississippi-Atchafalaya basin (24 percent) and the Great Lakes (21 percent). That result wasn't surprising given that the Midwest and Northeast have already seen heavy downpours increase by 37 and 71 percent, respectively, since 1958, the largest increases in the nation, according to the 2014 National Climate Assessment.



Nitrogen loading in the nation's waterways averaged for 1976-2005 (a) and how precipitation will increase that loading by mid-century (b) and by the end of the century (c) if greenhouse gas emissions continue on their current trajectory.
Click image to enlarge. *Credit: Sinha, et al./Science*

To counteract the increase just from the influence of precipitation would mean that the nitrogen being introduced to the land would have to be reduced by 30 percent.

"That is massive," Michalak said, and would be a significant ask of farmers struggling to maintain crop yields.

In the particular example of the Mississippi-Atchafalaya system, the Environmental Protection Agency has already mandated that nitrogen loads be reduced by 20 percent below 1980-1996 levels. To meet that goal in the face of the increases coming from rains would mean reducing fertilizer use by a whopping 60 percent.

The study also looked to broaden the view beyond the U.S. by looking for watersheds around the world that were similar to some in the U.S. and seeing how nitrogen loading might change with precipitation. They identified India, China and Southeast Asia — home to the majority of the world's population — as areas that could see major rises in nitrogen loading in the future.

The study makes clear that local managers and policymakers will need to rethink some of the ways they combat nutrient pollution and society will also have to develop technological solutions to reduce nutrient pollution, from implementing more efficient agricultural practices to potentially recycling various forms of nitrogen in sewage into animal feed, according to a commentary piece also published in Science.

If you want to manage nutrient loading "you need to account for the fact that the climate is changing at the same time," Michalak said.

You May Also Like:

[Stop What You're Doing and Look at This Gorgeous Larsen C Satellite Image]
[New Jersey Is Cutting Food Waste to Help the Climate]
[Despite Summer Snow, Greenland Is Still Melting]
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Exhibit J

FOSSIL FUELS (/ARTICLES/CATEGORY/FOSSIL-FUELS)

Shell's Sky Scenario: Solar Dwarfs Oil and Gas as World's Primary Source of Energy

On this week's Interchange podcast: the future of energy, according to Shell.

STEPHEN LACEY

APRIL 17, 2018

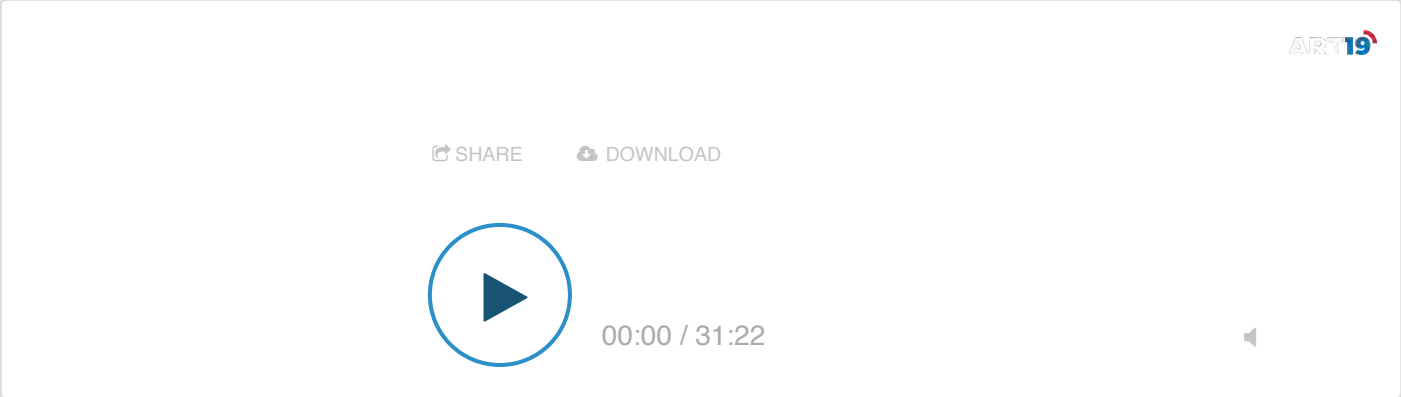
Shell looks to the future of energy.

Shell, the world's sixth-largest oil and gas company, just published a future "sky" scenario that's getting a lot of attention.

That potential future: By 2050, renewables could overtake oil, gas and coal as the primary energy source; by that date, it could be "impossible" to purchase a new internal combustion car; and by 2070, there could be 10,000 carbon capture plants operating globally.

Shell's energy transition report is receiving mixed reactions. Many energy experts are hailing Shell for putting together such an ambitious document. A lot of environmentalists are cynical, since oil and gas still play a prominent role in the company's future vision.

In this week's episode, we're going to walk through the different scenarios outlined by Shell. We'll also discuss what Shell's business might look like beyond 2050, as the company acquires more electricity retailers, EV charging assets and renewable energy developers.



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Recommended reading:

- Shell (https://www.shell.com/energy-and-innovation/the-energy-future/shell-energy-transition-report.html): The Energy Transition report
- Shell (https://www.shell.com/about-us/what-we-do/new-energies.html): The New Energies business
- Washington Post

  (https://www.washingtonpost.com/news/energy-environment/wp/2018/03/26/shell-yes-that-shell-just-outlined-a-radical-scenario-

for-what-it-would-take-to-halt-climate-change/?utm_term=.109a6e470004): Shell Just Outlined a Radical Scenario for What It Would Take to Halt Climate Change

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Exhibit K

EXHIBIT A

County	Municipality	Lat/Long	Resource Impacted (lake, wetland, stream)	Chapter 93 designation	Estimated Quantity of Release	Date Occurred	Date Reported
Allegheny	Forward Twp.	40.223°, -79.893°	UNTs to Sunfish Creek (S-150 and S-149)	WWF	1,500 gallons	5/31/2017	5/31/2017
Berks	Cumru Twp.	40.277°, -76.020°	UNT to Wyomissing Creek (S-B40)	HQ-CWF, Wild Tout	20 gallons	06/20/17	06/20/17
Berks	New Morgan Borough	40.1886°, -75.891°	UNT to Hay Creek (S-Q90)	EV, Class A Wild Trout	Unknown	11/11/2017	11/11/2017
Blair	Woodbury Twp.	40.4336°, -78.2684°	UNT to Piney Creek (S-M33)	HQ-CWF, Class A Wild Trout	2,000 gallons	06/26/17	06/26/17
Blair	Blair Twp.	40.409°, -78.442°	Wetland M79	_	100 gallons	06/28/17	06/28/17
Blair	Blair Twp.	40.409°, -78.442°	Wetland M79	_	300 gallons	07/01/17	07/01/17
Blair	Blair Twp.	40.409°, -78.442°	Wetland M79	_	30 gallons	08/31/17	08/31/17
Blair	Blair Twp.	40.412°, -78.372°	Wetland BB58	EV - Wild Trout	20-30 gallons	09/05/17	09/05/17
Blair	Frankstown Twp.	40.441°, -78.331°	UNTto Frankstown Branch Juniata (S-BB92)	WWF, Wild Trout	10 gallons	11/21/17	11/21/17
Cambria	Washington Twp.	40.414°, -78.567°	Wetland M59	EV-Wild Trout	less than 50 gallons	10/3/2017	10/3/2017
Cambria	Washington Twp.	40.414°, -78.568°	Wetland M59	EV-Wild Trout	250 gallons	10/10/2017	10/11/2017
Cambria	Washington Twp.	40.414°, -78.568°	Wetland M59	EV-Wild Trout	less than 50 gallons	10/11/2017	10/11/2017
Cambria	Cambria Twp.	40.437155°, -78.763529°	UNT to Stewart Run (S-CC1)	HQ-CWF	2 Gallons	12/11/2017	12/11/2017
Chester	Upper Uwchlan Twp.	40.071753°, -75.695906°	Marsh Creek	HQ, TSF	5 gallons	6/17/2017	6/17/178
Chester	Upper Uwchlan Twp.	40.082119°, -75.7157°	Marsh Creek	HQ, TSF	100 gallons	6/24/2017	6/24/2017
Chester	Upper Uwchlan Twp.	40.082119°, -75.7157°	Wetland H17	_	40 gallons	8/29/2017	8/29/2017
Chester	Upper Uwchlan Twp.	40.071753°, -75.695906°	Marsh Creek	HQ, TSF	0.5 gallons	9/9/2017	9/9/2017
Chester	East Goshen Twp.	39.981761°, -75.540403°	East Branch Chester Creek	TSF	500 gallons	10/25/2017	10/25/2017
Cumberland	Lower Frankford Twp.	40.2442°, -77.3226°	Wetland J35	_	500 gallons	09/27/17	09/27/17
Cumberland	Lower Frankford Twp.	40.2447°, -77.3306°	Wetland J35 and UNT to Locust Creek (S-J41)	WWF	100 gallons	02/27/18	02/27/18
Dauphin	Lower Swatara Twp.	40.199167°, -76.796667°	Susquehanna River (S-A22)	WWF	495 gallons	08/17/17	08/17/17
Dauphin	Lower Swatara Twp.	40.199167°, -76.796667°	Susquehanna River (S-A22)	WWF	50 gallons	08/24/17	08/24/17
Dauphin	Derry Twp.	40.234722°, -76.668333°	Wetland C26	_	250-300 gallons	09/07/17	09/07/17
Dauphin	Lower Swatara Twp.	40.199167°, -76.796667°	Susquehanna River (S-A22)	WWF	350 gallons	09/15/17	09/15/17
Dauphin	Lower Swatara Twp.	40.205643°, -76.769297°	Wetland W118	_	300-1,000 gallons	11/10/17	11/10/17
Dauphin	Derry Twp.	40.234722°, -76.668333°	Wetland C26	_	200 gallons	12/05/17	12/05/17
Delaware	Brookhaven Borough	39.866381°, -75.407342°	Chester Creek	WWF	500 gallons	5/3/2017	5/3/2017
Delaware	Brookhaven Borough	39.866381°, -75.407342°	Chester Creek	WWF	75 gallons	5/10/2017	5/10/2017
Delaware	Brookhaven Borough	39.866381°, -75.407342°	Chester Creek	WWF	5 gallons	5/17/2017	5/17/2017
Delaware	Brookhaven Borough	39.866381°, -75.407342°	Chester Creek	WWF	25 gallons	5/18/2017	5/18/2017
Delaware	Brookhaven Borough	39.866381°, -75.407342°	Chester Creek	WWF	200 gallons	5/19/2017	5/19/2017
Delaware	Middletown Twp.	39.894792°, -75.431853°	Chester Creek	WWF	1,500 gallons	7/17/2017	7/17/2017
Delaware	Middletown Twp.	39.894792°, -75.431853°	Chester Creek	WWF	40 gallons	8/21/2017	8/21/2017
Delaware	Middletown Twp.	39.894792°, -75.431853°	Chester Creek	WWF	50 gallons	9/2/2017	9/2/2017
Delaware	Middletown Twp.	39.894792°, -75.431853°	UNT to Chester Creek	WWF	1 gallon	10/27/2017	10/27/2017
Delaware	Middletown Twp.	39.894792°, -75.431853°	Chester Creek	WWF	10 gallons	12/14/2017	12/14/2017
Delaware	Middletown Twp.	39.894792°, -75.431853°	Chester Creek	WWF	25 - 45 gallons	12/15/2017	12/15/2017
Huntingdon	Shirley Twp.	40.342°, -77.852°	Aughwick Creek (S-L28)	TSF	300 gallons	07/06/17	07/06/17
Huntingdon	Shirley Twp.	40.321145°, -77.789497°	Wetland K69	EV-Wild Trout	7,000 gallons	10/10/17	10/10/17

EXHIBIT A

County	Municipality	Lat/Long	Resource Impacted (lake, wetland, stream)	Chapter 93 designation	Estimated Quantity of Release	Date Occurred	Date Reported
Huntingdon	Penn Twp.	40.369°, -78.066°	Raystown Lake	_	25-30 gallons	12/20/17	12/20/17
Indiana	Burrell Twp.	40.452822°, -79.225094°	UNT to Blacklick Creek (S-J58) and Wetland J53	CWF	130 gallons	5/13/2017	5/13/2017
Indiana	Burrell Twp.	40.450917°, -79.210806°	UNT to Weirs Run, Weirs Run, and Blacklick Creek (S-N93)	CWF/TSF	Unknown	9/27/2017	9/27/2017
Lancaster	West Cocalico Twp.	40.280°, -76.195°	Wetland J54 and UNT to Cocalico Creek (S-J59)	HQ-WWF	10-15 gallons	05/10/17	05/10/17
Lancaster	West Cocalico Twp.	40.280833°, -76.210278°	Wetland K32	_	25-30 gallons	5/13/2017 through 5/16/2017	5/13/2017 through 5/16/2017
Lancaster	West Cocalico Twp.	40.280°, -76.195°	UNT to Cocalico Creek (S-J59)	HQ-WWF	30 gallons	05/26/17	05/26/17
Lancaster	West Cocalico Twp.	40.281°, -76.209°	Wetland K32	_	20 gallons	06/09/17	06/09/17
Lancaster	West Cocalico Twp.	40.280787°, -76.210161°	Wetland K32	_	5,500 gallons	06/12/17	06/12/17
Lancaster	West Cocalico Twp.	40.283°, -76.158°	Wetland A56	_	250 gallons	07/19/17	07/19/17
Lebanon	Heidelberg Twp.	40.285278°, -76.238056°	Wetland H13	_	300 gallons	06/23/17	06/23/17
Lebanon	Cornwall Twp.	40.290°, -76.427222°	Snitz Creek (S-A17)	TSF	50 gallons	08/31/17	08/31/17
Lebanon	Cornwall Twp.	40.290°, -76.427222°	Snitz Creek (S-A17)	TSF	1 gallon	09/20/17	09/20/17
Lebanon	South Londonderry Twp.	40.253925°, -76.591637°	Wetland J47 and Wetland A30	_	50 gallons	12/20/17	12/20/17
Lebanon	South Londonderry Twp.	40.253925,° -76.591637°	Wetland J47 and Wetland A30	_	15 gallons	12/29/17	12/29/17
Washington	Union Twp.	40.231°, -79.998°	Froman Run (S-27) and UNT to Froman Run	TSF	1,500 gallons	6/2/2017	6/2/2017
Washington	North Strabane Twp.	40.2352778°, -80.103333°	UNT to Little Chartiers Creek (S-129)	HQ-WWF	5 gallons	6/6/2017	6/6/2017
Washington	Union Twp.	40.23055°, -79.99622°	Froman Run (S-27)	TSF	20 gallons	6/8/2017	6/8/2017
Washington	Union Twp.	40.23055°, -79.99622°	Froman Run (S-27)	TSF	30 gallons	6/11/2017	6/11/2017
Washington	North Strabane Twp.	40.2352778°, -80.103333°	UNT to Little Chartiers Creek (S-129)	HQ-WWF	1,000 gallons	6/22/2017	6/22/2017
Washington	North Strabane Twp.	40.2352778°, -80.103333°	UNT to Little Chartiers Creek (S-280)	HQ-WWF	1,000 gallons	6/24/2017	6/24/2017
Washington	North Strabane Twp.	40.2352778°, -80.103333°	Little Chartiers Creek (S-129)	HQ-WWF	3,000-6,000 gallons	9/9/2017	9/9/2017
Westmoreland	Derry Twp.	40.441°, -79.363°	UNT Boatyard Run (S-P-20)	CWF	150 gallons	5/4/2017	5/4/2017
Westmoreland	Derry Twp.	40.44213°, -79.34305°	Wetland O45	_	5 gallons	5/6/2017	8/4/2017
Westmoreland	Derry Twp.	40.44213°, -79.34305°	Wetland O45	_	300 gallons	5/12/2017	5/12/2017
Westmoreland	Hempfield Twp.	40.289°, -79.668°	UNT Little Sewickley Creek (S-229)	TSF	1,000 gallons	5/23/2017	5/23/2017
Westmoreland	Derry Twp.	40.44213°, -79.34305°	Spruce Run (S-061) and Wetland O45	HQ-CWF	525 gallons	5/24/2017	5/24/2017
Westmoreland	Derry Twp.	40.441°, -79.363°	UNT to Boatyard Run (S-P-20)	CWF	350 gallons	6/6/2017	6/6/2017
Westmoreland	Derry Twp.	40.441°, -79.363°	UNT to Boatyard Run (S-P-20)- 2 locations	CWF	350 gallons	6/29/2017	6/29/2017
Westmoreland	Murrysville Twp.	40.4172°, -79.607°	UNT to Turtle Creek (S215)	TSF	500-700 gallons	9/5/2017	9/5/2017
Westmoreland	Derry Twp.	40.445139°, -79.301083°	Wetland N28	_	2,700 gallons	9/22/2017	9/22/2017