



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

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 be crossed by the Pipeline.

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

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.

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%20202016-11-29-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 Loss Control Measures 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 in 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:

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>.

<i>Impacts in acres</i>	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.

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 within 660 feet, and no excessive noise within 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

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_Report/s/Sunoco_Response/Goldfinch%20Lane%20Crossing%20-%20Sunoco%27s%20Response%20to%20DEP%20-%202018-03-30-18.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,

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

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.

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 Plan⁵⁶ 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

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.

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 Shell⁶⁷ 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 in 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 change⁷⁰ 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.

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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