



December 6, 2021

Via electronic mail: [RA-EPREGIONALPERMIT@pa.gov](mailto:RA-EPREGIONALPERMIT@pa.gov)

Department of Environmental Protection  
Regional Permit Coordination Office  
Dominic Rocco, PE, Director  
Rachel Carson State Office Building  
400 Market Street, 10th Floor  
Harrisburg, PA 17101  
717-772-5987

**Re: Technical Supplement on Transco Regional Energy Access Expansion Project's Draft State Water Quality Certification and Applications for Permits for Water Obstructions and Encroachments and for Erosion and Sediment Control**

Dear Mr. Rocco,

The Delaware Riverkeeper Network, Brodhead Watershed Association, PennFuture, and Clean Air Council, provide the following supplement to joint comments submitted to the Pennsylvania Department of Environmental Protection (Dept.) by PennFuture, Clean Air Council, and the Delaware Riverkeeper Network on October 18, 2021 during the original public comment period for the draft state water quality certification under Section 401 of the Clean Water Act issued to the Transcontinental Gas Pipe Line Company, LLC ("Transco") for the Regional Energy Access Expansion Project ("the Project"), published in the Pennsylvania Bulletin on September 19, 2021. We also submit these comments on the applications for Erosion and Sediment Control Chapter 102 permits ESG02000160002, E40-780, E13-185, E48-435, and E09-998 (Buck Township, Bear Creek Township, Plains Township, Jenkins Township, Laflin Borough, Wyoming Borough, West Wyoming Borough, Kingston Township, & Dallas Township, Luzerne County; Ross Township, Chestnuthill Township, & Tunkhannock Township, Monroe County; Lower Mount Bethel Township, Northampton County; Lower Makefield Township & Ivyland Borough, Bucks County; East Whiteland Township, Chester County. We also submit these comments on Transco's Chapter 105 Water Obstruction and Encroachment DEP Application No. E4083221-006 APS ID No. 1036224; AUTH ID No. 1349631 for Luzerne County (including proposed impacts in Buck Township, Bear Creek Township, Plains Township, Jenkins Township, Kingston Township, Dallas Borough, Wyoming Borough, West Wyoming Borough, and Laflin Borough); and for

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Transco's Chapter 105 Water Obstruction and Encroachment DEP Application No. E4583221-002 APS ID No.1036240; AUTH ID No. 1349660 for Monroe County (including proposed impacts in Ross Township, Chestnuthill Township, & Tunkhannock Township) ("Applications") sought by Transco.

Transco proposes to construct, install, modify, operate and maintain its Regional Energy Access Expansion ("Project"), allowing it to provide an additional 829,400 dekatherms per day (dth/D) of firm transportation service to serve incremental natural gas supply needs beginning in the 2023/2024 winter heating season.

The proposed segmented pipeline project, would extend across three Pennsylvania Department of Environmental Protection (DEP) regions: 3 counties in the Northeast Region (Luzerne, Monroe, Northampton), 3 counties in the Southeast Region (Bucks, Chester, Delaware), and 1 county in the Southcentral Region (York). The pipeline will not require earth disturbance in Delaware and York counties. Due to the complexity of this pipeline project, DEP notes in its August 26, 2021 Completeness Letter that this project may be handled outside of the 90-day Permit Decision Guarantee due to its complexity<sup>1</sup>. Commenters believe that this complex linear project, with many wetland and waterbody proposed cuts, should not be pushed through in any supposed Guarantee process; and the agency and the public should have additional time to thoroughly review this project both from the desk top and by field-truthing. This is especially important as already sister agencies, including the Federal Energy Regulatory Commission (FERC) have recently requested missing information and Transco analysis and justification pertaining to wetland impact attributes that also apply to DEP review of these applications for Pennsylvania<sup>2</sup>. DEP'S Regional Permit Coordination Office (RPCO) is providing oversight of the entire project, to be a point of contact for the applicant, and to coordinate with the County Conservation Districts to ensure that the technical reviews are consistent and are being conducted in a timely manner.<sup>3</sup> Commenters contend that review by the local conservation districts is a critical piece to this large project especially in light of E&S incidents that typically occur with the construction practices Transco is proposing.

The proposed methane gas facilities if approved would include:

- Approximately 22.3 miles of 30-inch-diameter pipeline partially collocated with Transco's Leidy Line A from milepost (MP) 0.00 to MP 22.32 in Luzerne County, Pennsylvania ("Regional Energy Lateral");
- Approximately 13.8 miles of 42-inch-diameter pipeline collocated with Transco's Leidy Line System from MP 43.72 to MP 57.50 in Monroe County, Pennsylvania ("Effort Loop");

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<sup>1</sup> PADEP Completeness Notification to Transco for Water and Wetland Obstruction, August 26, 2021 [https://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/REAEP/August 26, 2021 Chapter 105, \(Luzerne and Monroe\) Completeness Letter.pdf](https://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/REAEP/August%2026,%202021%20Chapter%20105,%20(Luzerne%20and%20Monroe)%20Completeness%20Letter.pdf)

<sup>2</sup> FERC Environmental Information Request for EIS to Transco, filed December 1, 2021 (Docket No. CP21-94-000)

<sup>3</sup> DEP Project Information Sheet For Transco Regional Access Energy Project, April 2021. Accessed 5.25.21

- Addition of a gas-fired turbine driven compressor station, identified as Compressor Station 201, to be located along the existing Transco pipeline with 11,107 nominal horsepower at International Organization for Standardization (“ISO”) conditions in Gloucester County, New Jersey;
- Addition of two gas-fired turbine driven compressor units with a combined 31,800 nominal horsepower at ISO conditions at existing Compressor Station 505 in Somerset County, New Jersey, to accommodate the abandonment and replacement of approximately 16,000 horsepower from eight existing and less energy efficient gas-fired reciprocating engine-driven compressor units, which will increase the certificated station compression by 15,800 horsepower;
- Addition of two gas-fired turbine driven compressor units with a combined 63,742 nominal horsepower at ISO conditions and modification of three existing compressors at existing compressor station 515 in Luzerne County, Pennsylvania to support the Project and to accommodate the abandonment and replacement of approximately 17,000 horsepower from five existing and less energy efficient gas-fired reciprocated engine-driven compressors and increase the certificated station compression by 46,742 horsepower;
- Uprate and rewheel two existing electric motor-driven compressor units at existing Compressor Station 195 in York County, Pennsylvania to increase the certificated station compression by 5,000 horsepower and accommodate the abandonment of two existing and less energy efficient gas-fired reciprocating engine-driven compressors with approximately 8,000 horsepower of compression;
- Modifications at existing Compressor Station 200 in Chester County, Pennsylvania;
- Uprate one existing electric motor-driven compressor unit at Compressor Station 207 in Middlesex County, New Jersey to increase the certificated station compression by 4,100 horsepower;
- Modifications to three existing pipeline tie-ins in Pennsylvania (“Hildebrandt Tie-in, Lower Demunds REL Tie-in, and Carverton Tie-in”);
- Addition of regulation controls at an existing valve setting on Transco’s Mainline “A” in Bucks County, Pennsylvania (“Mainline A Regulator”);
- Modifications at the existing Delaware River Regulator in Northampton County, Pennsylvania;
- Modifications at the existing Centerville Regulator in Somerset County, New Jersey;
- Modifications to the existing valves and piping at the Princeton Junction (“Station 210 Pooling Point”) in Mercer County, New Jersey;
- Modifications to the three existing delivery meter stations in New Jersey (“Camden M&R Station, Lawnside M&R Station, and Mt. Laurel M&R Station”);
- Modifications to one existing delivery meter station in Maryland (“Beaver Dam M&R Station”);
- Contractual changes (no physical modifications) at ten existing delivery meter stations in Pennsylvania and New Jersey, including the Algonquin-Centerville Meter Station, Post Road Meter Station, New Village Meter Station, Spruce Run Meter Station, Marcus Hook Meter Station, Ivyland Meter Station, and Repaupo Meter Station.

## **Riparian Buffer Waivers Should Not be Granted and Forested Buffers Require Better Protection**

### **Section 2-1 E&SC/SR Plan Narrative and Drawings and Riparian Buffers**

It appears that Transco is continuing to request a riparian buffer waiver under 25 PA Code §102.14(d)(2)(ii) if riparian buffers are undisturbed to the “extent practicable.” In Section 2-1 E&SC/SR Plan Narrative and Drawings Transco claims BMPs are being implemented to limit disturbance to riparian buffers and as such, a Riparian Buffer Waiver has been requested by Transco along with this ESCP application (Section 1-7). Or where required, a riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

**Comment:** Commenters request that this waiver not be allowed especially for existing forested and scrub shrub stream crossings and associated buffers and that all temporary and additional temporary work spaces and non-active ROWs are reforested using native trees and shrubs. The preservation of forested buffers along EV and HQ streams or impaired streams is especially important but in general all forested buffers lost by these linear pipeline cuts should be preserved by consideration of HDD or boring to avoid impact to the vegetation that comes with open cuts which are what Transco is proposing. Forest matting and other innovative approaches could be employed to cause less disruption to soils. A thorough analysis of HDD and alternative crossing methods especially where forests are present with forested riparian buffers should be provided by the applicant with evidence that involves more than just the applicant stating HDD is not feasible. A BMP of a narrowed ROW at stream crossings is not ample to protect HQ, EV or impaired streams.

In other application sections, including Transco’s Appendix Transco states “it will replant native tree and shrubs within the impacted forested riparian buffers, as outlined in Appendix S4-2 Onsite Wetland and Riparian Reforestation Plan” and “An onsite Wetland and Riparian Reforestation Plan has been provided in Requirement L-5, Module S4 and Compensatory Offsite Mitigation Plan has been provided in Requirement L-5, Module S4 of the Environmental Assessment.” Transco states “the impacted riparian zone will be restored for a minimum of 15 feet landward of the top of bank. If the pre-impact riparian buffer of native herbaceous and shrub vegetation exceeds 15 feet beyond the top of bank, the area to be seeded should be as follows: 150 feet in High-Quality waters, 100 feet in other waters, or existing width of the riparian zone if it is less than the minimum requirements. Ernst Seed Mix 178 (Riparian Buffer Mix) or similar shall be applied on restored banks and riparian zones. In addition, where existing forested buffers are impacted these shall be replanted outside of the existing maintained ROW, as indicated in forest replanting plans for the Project outlined in the Chapter 105 permit.”

Transco had stated in their Chapter 102 application (that was deemed incomplete by the DEP) in Section 1-7 Riparian Buffer Waiver Request, “Linear projects including pipelines are eligible for the Riparian Buffer Waiver under Riparian Buffers Pipeline installation and will take place within an existing cleared and maintained pipeline ROW. Due to the linear nature of the project, temporary impacts within riparian buffers are unavoidable. At locations where it was impossible to avoid riparian impacts due to safety issues, Transco will

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implement BMPs to minimize the impacts. After completing the construction activities, areas used for pipeline installation and as contractor yards/staging areas will be restored back to pre-existing contours and reseeded with a riparian seed mix in areas where slopes are less than 10%. The MLV-515RA20, MLV-515RA30, Carverton Tie-in, Lower Demunds REL Tie-in, and Hildebrandt Tie-in/MLV-515RA40 sites, where permanent increase in impervious area is proposed, were examined for riparian buffers. Riparian buffers were identified at MLV-515REL20 and BMPs were designed to minimize the impacts to this area. Tree and shrub plantings will occur in forested riparian buffers outside of the maintained ROW as outlined in riparian reforestation plans outlined in the Chapter 105 permit.”

**Comment:** It appears Transco is stating clearly it will only conduct the bare minimum required by regulations (for remediation or required under § 102.14) of replanting forested riparian buffer plantings. Open cuts and clear cuts are commonplace proposals even in HQ and EV waterbodies and buffer restoration “to mitigate” appears to be considered only what the agency requires. It would be refreshing to see better practices and restoration proposed for a pipeline that will continue to operate for decades with likely similar segmented pipeline projects. For example, if an existing Transco pipeline crossing in its original ROW has from past pipeline construction harm had minimal regrowth or even maintenance to keep regrowth down of woody vegetation (so therefore it is currently a herbaceous area), it would go a long way for Transco to not simply replace with just herbaceous and what is currently present post this REAE expansion but instead widen the riparian buffers with native tree and shrub species as it is proposing for the REAE section. This would improve water quality over time, increase the riparian buffer widths, and would also likely help shade out invasive species that often come with these pipeline harms and repetitive cuts. Pennsylvanians cannot continue to bear the brunt of these fossil fuel sacrifice zones.

**Comment:** Transco should explain and elaborate on this assertion: “At locations where it was impossible to avoid riparian impacts *due to safety issues, Transco will implement BMPs to minimize the impacts.*” Does this mean HDD or boring was not feasible for the particular crossing even if it is an EV or HQ wetland or forested buffer? What were the calculations if HDD is not feasible – why? Was it due to cost? Were mature trees that are proposed to be cut and the ecosystem services they provide (carbon sequestration, shade, water quality filtration, etc.) inventoried fully in this analysis? Where is the analysis for each crossing to ensure the agency has the information to understand how Transco concluded its only option is to propose and open cut? How can DEP permit the same BMPs that have been utilized and failed to protect existing uses along other pipelines for this proposed pipeline?

**Comment:** In tables, narratives, and in documents, Transco should be clear on where it is requesting a waiver and where it is not so the DEP and the public can review. Drawings depict “bubbles” of riparian buffer zones but because each waterbody and wetland to be crossed is specific, more specific detail would lead to better remediation at each crossing. DEP should not allow any waivers based on the linear and complex nature and multitude of cuts these pipelines inflict to a number of waterbodies. That guidance is in keeping with the revised Chapter 105 technical alternatives analysis wetlands guidance that was created through a stakeholder process and out for public comment (Sept, 2021). Transco should

also voluntarily expand the riparian area if it is possible, especially with the nature and concern of invasive plants that often move into these linear transportation areas. Transco states 150 foot seeding in High Quality waters but does not mention Exceptional Value waters – Exceptional Value waters need to be specified clearly. The science is clear, a wider riparian area is always more protective and forested buffers are the best for water quality health (being sure to consider endangered species like bog turtle habitat – each wetland and waterbody crossing is specific with its own specific natural characteristics). As indicated in the updated technical guidance, native seed mixes are best and no invasive exotic plants should be used, whether officially on the PA Noxious Weed list or those invasive plants not yet on the list (and there are many) should not be planted in these mixes. Attention to high pollinator habitat plants for herbaceous mixes is also beneficial. The application indicates existing invasive plants that are already at some of the wetland sites, likely due to disturbance of the original Transco pipelines – this speaks to how continued segmentation and repeated cuts over time change and irreversibly degrade the habitat. Innovative approaches like forest mats that protect the original buffers and cause less disruption to soils have been accomplished elsewhere and shared with DEP and pipeline applicants since as early as 2013 by DRN and can help avoid colonization of invasive plants in additional areas (see diagram below).<sup>4</sup> Actualizing these more innovative construction practices here in Pennsylvania, rather than proposing the same type of construction practices (narrow ROW crossing only with open cuts) as has been done since 2010 and at the inception of the shale boom; and that we have a record of water quality harms and clean water act violations is needed now, and long overdue; especially in light of the build out and repetitive cuts these gas infrastructure projects plan to inflict.



*Harvesting sod mats-*

*About 8-12 inches of soils and rootstocks and propagules were lifted and stored and replaced within a few days as the string progressed.*



*The cross-section*

Presented to DRBC, 3/5/13 for Delaware Riverkeeper Network by Eggett Schellie Adams & Leslie Sauer

(Source: Expert Leslie Sauer's presentation to DRBC, *Loantoka Park, Morris County Park Commission, NJ, 3/5/13*).

<sup>4</sup> Sauer, Leslie. *Achieving High Quality Restoration Along Pipeline Rights-of-Way: An Overview of Pipeline Construction Impacts with Recommendations for Reducing Environmental Damage*, May 2014

If geofabric material is being used for stabilization of streambanks, please note the importance of using products that do not trap sensitive species like rattlesnakes (see Dec 1, 2021 FERC comment pertaining to this concern). Products should also be naturally decomposing (coconut fibers for example) and limit any sort of plastic coatings and plastic mesh that are harmful to the environment or may entrap animals, including amphibians.

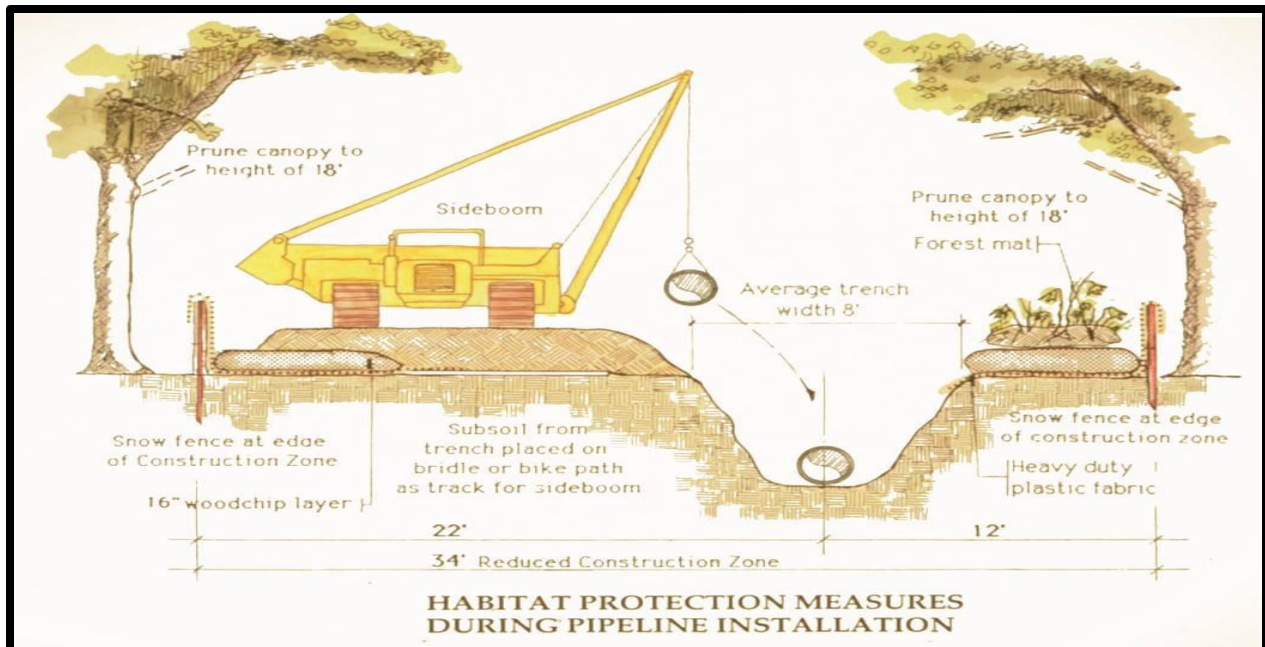
**Requirement L-5, Environmental Assessment Module S4–Mitigation Plan (April, 2021)**

Transco states, “Selected trees may be preserved along the edge of the pipeline corridor to help minimize impacts, if possible. Stumps and root systems will be left intact when feasible by cutting them at or slightly above ground level. Preserving tree/shrub stumps and root systems will facilitate re-sprouting during the restoration period.”

**Comment:** Pruning limbs from mature trees along the edge of the ROW is a practice that agencies have requested and pipeline companies have implemented in other states to decrease the number of mature trees that have to be cut (see diagram below of pruning practice – height of 18’ to allow construction equipment to operate and mature trees to survive). Root Sprouting can occur depending on species of trees but in Pennsylvania deer browse is a common threat, so stump sprouting should not be considered a very viable option nor take the place of trimming limbs. It is not clear to commenters why mature trees would need to be cut down but stumps can remain where tree limbs could not simply be cut along the ROW side leaving the tree standing. Transco does not state if this root stump practice is for ATWS, TWS but as indicated often, any mature tree cutting for scalloped out TWS and ATWS should be avoided as much as possible. Transco should use the existing expansive ROW or nearby upland herbaceous areas and already impacted ROW areas as much as possible for staging, parking equipment, and storing E&S materials and storing wetland crossing matting. The diagram below illustrates how mulch wood chip layers and sub soil from the trench are used under construction equipment to minimize ROW width and cushion the existing ROW to allow construction over existing infrastructure to avoid continued forest clearing on the outside of the ROW.<sup>5</sup> Forest and vegetation on steep slopes adjacent wetlands and waterbodies should be preserved by using innovative techniques. Note construction fencing is also used to ensure better enforcement and tracking in the field once construction practices are begun which would help construction workers stay in the narrower ROW and help with agency oversight and inspections.

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<sup>5</sup>Sauers, Leslie. Achieving High Quality Restoration Along Pipeline Rights-of-Way: An Overview of Pipeline Construction Impacts with Recommendations for Reducing Environmental Damage, May 2014



(Source: Expert Leslie Sauers presentation to DRBC, *Loantoka Park*, *Morris County Park Commission*, NJ, 3/5/13).

**Comments:** Transco states it will replant tree and shrub species in required buffer areas either as cuttings, bare roots or containers. There is a big difference between these three types of native plant stock (container stock being more expensive and ball and burlap trees are not even mentioned). To ensure faster restoration of forested buffers, commenters suggest requiring Transco to use container stock in combination with bare root and cuttings (cuttings along degrading stream banks and cut sloped banks) to speed up canopy cover. Using cuttings alone with seed mix along the streambank cuts is not adequate to achieving restoration especially of woody plants and also because the monitoring period is limited to only 5 years. Incorporating bigger native woody stock with smaller woody stock would be more in keeping with standard riparian restoration practices and assist in reducing thermal impacts from clear cuts.

Circular mulch mats secured with a staple can replace or reduce the need for the practice of spraying herbicide around the base of the tree shelters which is noted as a possible practice in Transco's restoration plan. The mulch mats also assist with protecting the roots and soil and help with moisture retention. Tree shelters that are at least 5 feet tall or wider deer enclosures and fencing for multi stemmed shrubs are necessary in most areas of Pennsylvania to increase survival of trees and shrubs from deer browse impacts. These details should be explicitly included in restoration plans as part of the individual waterbody crossing design. TreeVitalize is a public/private Pennsylvania program that has good specifications as well as DCNR documents on buffer plantings (<https://extension.psu.edu/treevitalize-a-green-partnership-to-restore-tree-cover>).

Though native tree species are listed in the mitigation plan for riparian buffers, it does not provide detail or planting specifications on plant stock size for each crossing or more detailed planting design for each crossing. More specifications and specific planting designs

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--especially where buffers are required--would better ensure a more successful stream buffer restoration over time and ensure long term impacts from thermal pollution or erosion are minimized. This is especially important as it will take longer than 5 years (pipeline monitoring requirement) to reach a mature canopy from impacts of this pipeline which is why avoidance of disturbance to mature forests and PFO and PSS wetlands would be more appropriate.

A tree inventory of existing number of trees that are proposed to be cut and then a requirement to replace those trees with a higher ratio of young trees could also add better protections to forests that often are proposed to be cut by pipeline applicants (due to cost savings for the operator – trees are not valued as they should be for all of their ecosystem services or their true value). Some private landowners or land trusts with eased lands faced with pipeline projects have conducted tree inventories for their own properties to ensure adequate restoration, reforestation, and compensation by the pipeline operators. The DEP, in its obligation to protect the environment under Article 1 Section 27 of the Pennsylvania Constitution Environmental Rights amendment, could do the same to achieve higher quality restoration of these sensitive areas while also providing incentive for operators to do less harm in sensitive natural areas and forests and to stay more within the existing ROW if one exists (for this application there is an existing ROW).

### **Restoration of Forested and Scrub Shrub Wetlands Need Stronger Protections**

Transco states “Restoration of temporarily impacted wetlands associated with PFO and PSS wetlands will involve onsite replanting. After the completion of construction, wetland areas within the ROW will be restored to pre-construction contours and seeded with Ernst FACW Meadow Mix (ERNMX-122), as outlined in Attachment A, or an alternative wetland seed mix that contains similar species. After seeding, impacted PSS and PFO wetlands outside the permanent maintained ROW will be replanted with native live stakes, bare root or container tree and shrub species up to 5 feet from the pipeline centerline. A ten-foot-wide herbaceous corridor will remain over the pipeline and in between existing pipelines to allow for pipeline maintenance and to maintain the integrity of the pipe. In PFO impacted wetlands, only shrub species shall be planted from 5 to 15 feet of the pipeline centerline. Outside 15 feet, both tree and shrub species may be planted. A summary table outlining proposed PFO and PSS impacted wetlands, their location, and proposed restoration is outlined in Attachment C – Onsite Wetland and Riparian Buffer Replanting Table. In addition, replanting areas for each pipeline facility are outlined on the provided figures. The vegetative design of the PFO and PSS impacted wetlands outlines a combination of specific native tree and shrub species selected for different hydrologic regimes and different vegetative cover types throughout the Project. Trees and shrubs selected for the replanting were based on species identified during wetland delineations and area outlined in Table 2-1.

TABLE 2-1 - WETLAND REPLANTING SPECIES LIST			
Scientific Name	Common Name	Status	Stratum
Black Willow	<i>Salix nigra</i>	OEL	Tree
Silver Maple	<i>Acer saccharinum</i>	FACW	Tree
River Birch	<i>Betula nigra</i>	FACW	Tree
Yellow Birch	<i>Betula alleghaniensis</i>	FAC	Tree
Red Maple	<i>Acer rubrum</i>	FAC	Tree
Black Gum	<i>Nyssa sylvatica</i>	FAC	Tree
American sycamore	<i>Platanus occidentalis</i>	FACW	Tree
Smooth Alder	<i>Alnus serrulata</i>	OEL	Shrub
Silky Dogwood	<i>Cornus amomum</i>	FACW	Shrub
Common Nirebark	<i>Physocarpus opulifolius</i>	FACW	Shrub
Highbush Blueberry	<i>Vaccinium corymbosum</i>	FACW	Shrub
Winterberry	<i>Ilex verticillata</i>	FACW	Shrub
Red Chokeberry	<i>Aonion trifoliosa</i>	FACW	Shrub
Northern Spicebush	<i>Lindera benzoin</i>	FAC (EMP) FACW (NCNE)	Shrub
Pussy Willow	<i>Salix discolor</i>	FACW	Shrub

**Comment:** How does Transco ensure pre-construction contours of wetlands and streambanks are restored to original contours? We recommend 5-foot clearance from pipeline and pipelines in an effort to ensure some planting of native shrubs can occur between pipes to limit the amount of open areas not replanted.

**Comments:** It's important that native shrubs are now being incorporated to plant 5-15 feet from the pipeline centerline to ensure better restoration as on many past pipeline projects in Pennsylvania there was little planting of woody vegetation. We would suggest with the diverse types of native shrubs available (considering roots) Transco could plant 5 feet from the centerline. We would suggest adding *Clethra alnifolia* (sweet pepperbush) (narrow spread and FAC+) and *Sambucas canadensis* (American elderberry) (intermediate spread and FACW) for example, as terrific small understory shrubs that are shade tolerant, have high wildlife value, and have shallow rooting systems. As indicated before, including these additional attributes in the planting design and on the plant lists at a glance will ensure better overall success, less long-term thermal pollution, diverse restoration and proper planting.

The list of native trees and shrubs for wetlands looks diverse and healthy and planting these PFOs and PSS wetlands will go a long way to speeding up restoration. Because in some cases it may be harder to shelter trees and shrubs in wetlands from deer, adding deer preferences to the tables and planting design specifically would be beneficial. For example, we know that in some instances northern spicebush is not preferred by deer (if they have other native vegetation to eat) while dogwood species may be a favorite. This research should be included in the design and tables to ensure proper review and overall restoration success which will lead to less thermal impacts over time. In some cases there likely will be sacrifice plants that are not fenced; this might be outlined in the planting density plans but if not it should be. Commenters suggest adding *Cephalanthus occidentalis*/button bush (OBL) to the possible planting list as it appears to be deer resistant based on field observations where deer browse is heavy and it also is extremely beneficial to native pollinators. There are various nurseries and sources to check deer herbivory scores to update the planting lists and

plans. In upland areas, of course tree and shrub sheltering can be much simpler than in dynamic or wet floodways, streambanks, or wetlands.

It is important to also note that any type of fencing or sheltering, as well as construction fencing for shorter term, should not trap amphibians or other water species that may be using these wetlands. Vernal pool migration should be specifically addressed in these plans as well to ensure entrapment does not happen inadvertently.

Transco notes in its mitigation plan, “in certain situations where meadow vole population is extensive, meadow vole bait stations including rodenticide may be utilized to control the local population. Transco also notes Repellex tablets may be applied or reapplied to deter herbivory.

**Comment:** It is critical that rodenticide is not used as a method for rodent control as it has cascading impacts to the environment, the food chain, and raptors that may feed on dead poisoned carcasses. Rodenticides should be explicitly prohibited; there are various mechanical maintenance methods that can limit vole damage or more plantings can be conducted to account for vole damage. More explanation on “Repellex tablets” is needed to understand if this is a non-lethal nontoxic formula for all species and water quality.

### **Proposed Cuts to Wetlands Are Not Protective and will Cause Degradation**

**Comment:** According to Transco’s Section 2-1, Table 5 of its ESCGP Permit Application Narrative (dated April 2021 – revised July, 2021), there are 41 Exceptional Value (EV) wetlands to be impacted by this project. Of these 41 EV Wetlands, 24 consist of wetland habitats that are PFO/PSS combinations with species highlighted including red maple, high bush blueberry, black willow, alder, and dogwood. Despite these sensitive resources and EV streams and wetlands, for the Effort Loop alone, Transco’s narrative states that all waterbodies will be cut by dry open-cut construction methods for all but one resource crossing. A conventional bore is being proposed at one location due to the location of an adjacent roadway. If borings can occur under roads, they can likely also occur under sensitive EV wetlands and DEP should require hydrologic analyses for all of these crossings at a minimum if more protective measures are not required. This method of crossing is not protective and will cause thermal impacts and sedimentation impacts both of which have cascading effects, especially for EV wetlands or wetlands that are PFO or PSS. In addition, for the Luzerne County Regional Energy Lateral pipeline segment, Transco’s narrative states that most of the receiving waterbodies to be cut are naturally reproducing trout streams which means that any wetlands hydrologically connected to these trout streams have EV designation. Commenters did not have the time to cross check if indeed these classifications are correct in the applications at this time but again our spot checks found discrepancies. Furthermore, Transco needs to justify and share the analysis why the open trench method is the only alternative for each of its proposed crossings.

As part of our spot check review, we reviewed Transco’s chart and cross referenced several EV wetland listings with the wetland buffer restoration drawings provided by Transco. DEP had requested in its incompleteness response that EV wetlands should be identified on the drawings. In the April 2021 restoration plan (L-5-Restoration Module S-4 – Mitigation Plan)

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the WMH drawings do not denote EV wetlands and include maps and drawings dated 3/21/21. These plans were accessed on the pipeline portal on 12/5/2021. All maps should be updated as requested by DEP back in August. Updated restoration maps are especially important as these will assist with long term monitoring well after the project would be constructed. Chapter 105 Impact drawings for Monroe County accessed on the pipeline portal on 12/5/2021 and dated as 3/5/21 on the drawings denote acreage impacts in the legend to assist with review and lat long of the wetlands but do not include the classification of the wetlands that are EV. It's important all of these drawings and maps are updated and also posted up on the pipeline portal for public review during the public review process otherwise the pipeline portal is not giving the public up-to-date information to provide thorough review. Actual stream names would also be beneficial to reviewers on the drawings. Finally, it is a disservice to not provide available alignment maps and GIS and kmz layers for the pipeline route and resources to be impacted as part of the pipeline portal and for public review. Transco should be required to submit these layers to the agencies for proper agency review and oversight and as such they should also be made available to the public.

DEP in its own incompleteness response requested Transco a) identify EV wetlands on drawings b) conduct EV wetlands anti-degradation analysis for any discharges to EV wetlands from the project c) The analysis should be performed by a wetland biologist and should comment on the project's effect and potential impacts on the type of wetland present, the hydrology, soils, and vegetation of the wetland. The analysis should consider the following:

- b.i. How the wetlands obtain their hydrology and how this project impacts it.
- b.ii. What type of wetland is present and will the proposed project impact the vegetation and function of the wetland.
- b.iii. Any primary and secondary impacts to the wetlands as a result of this Project.

Commenters believe that Transco has yet to adequately and thoroughly outline these requests and conduct these analyses fully.

### **Groundwater Impacts Are Not Fully Accounted For and Can Cause Wetland Damage**

As indicated in a Princeton Hydro expert report, an "often overlooked impact caused by pipelines (whether wastewater, stormwater or gas/oil) is that their construction can actually alter the movement of groundwater. Essentially, when the pipe and pipe trench intercept the shallow aquifer, groundwater flows can be prevented from flowing normally leading to changes in base flow conditions or the hydrologic properties of adjacent wetlands. The pipeline and pipeline trench can function as a subsurface diversion forcing groundwater away from vital stream and wetland resources."<sup>6</sup>

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<sup>6</sup> The Short and Long-Term Consequences of the Construction of the PennEast Pipeline– A White Paper, Princeton Hydro, LLC, July 2015.

## **Thermal Impacts and Sedimentation to Waterbodies Due to Proposed Open Trench Crossings in Anti-Degradation Waters Should Not be Permitted**

Transco states in their application the following:

“Due to the overall nature of the Project, thermal impacts to surface waters are not anticipated. The pipeline installation activities will primarily take place within an existing cleared and maintained pipeline right-of-way. There will be no increase in stormwater discharge. The primary means to address thermal impacts on this Project is to limit the size and duration of exposed earth. Revegetation procedures and the Sequence of Construction outline disturbed areas being immediately revegetated. Stormwater runoff associated with the installation of the MLVs and Tie-ins will be routed through the stormwater BMP’s designed to retain and infiltrate the first surge of water from the site. The first surge of water will be the warmest water for the duration of the storm event and will quickly cool as the storm event progresses. The BMPs are designed to capture and infiltrate this warmest surge of stormwater. Based on routing calculations, stormwater is not discharged from the BMPs for the first 12 hours during a 100-year/24-hour storm event. The retention period is longer for less intense storms. Therefore, as a result of these measures, no significant thermal impact to the receiving waters is anticipated.”

**Comment:** With forest clearing being proposed near streams and existing forested buffers in PFO and PSS wetlands and along HQ or EV streams, it is unclear how the above explanation by Transco is accurate. Is Transco planning temperature monitoring pre and post project to document their assertion? Transco also asserts that the work will be done in an already cleared ROW, yet we understand that co-location will often be requiring more land and forest clearing which will mean a bigger wider open ROW. See section on non-collocated areas as well especially along the Luzerne portion of the pipeline. Native shrub and tree planting is a step in the right direction to reduce thermal impacts but to grow shade to replace mature canopy that will be lost by open cuts proposed will take many years to accomplish. Sedimentation impacts are also not addressed by Transco which ultimately come during pipeline construction and subsequent steep slope E&S issues that can and often do arise (sediment warms the water column). DRN and Princeton Hydro<sup>7</sup> have documented elevated wetland temperatures along similar pipeline cut projects in the Delaware River Basin using automatic temperature probes.<sup>8</sup> Furthermore, soil compaction especially from ATWS, and TWS cut outs proposed near waterbody crossings has been documented on similar pipeline routes in the Delaware River Basin by DRN. This compaction can ultimately lead to increased stormwater runoff impacts.<sup>9</sup>

### **Tunkhannock Creek Watershed and the Long Pond Macrosite, Mud Run, and Poplar Creek**

Transco notes that construction of the Effort Loop would impact a total of 27 acres of habitat within the Long Pond Preserve Important Bird Area (IBA), of which 8.8 acres would

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<sup>7</sup> The Short and Long-Term Consequences of the Construction of the PennEast Pipeline– A White Paper, Princeton Hydro, LLC, July 2015.

<sup>8</sup>White Paper: Pipelines A Significant Source of Harm, Delaware Riverkeeper Network,

<sup>9</sup> Meliora technical memo – TGP Pipeline Compaction Study of Temporary Work Spaces, 2013

be permanently impacted (i.e., forest converted to herbaceous cover). This geographic area is referred to by the Monroe County Natural Area Inventory (NAI) as the “Long Pond Microsite”. This is the geographic area directly impacted by the Effort Loop.

The Long Pond Macrosite, covers nearly a third of the Pocono Pines quadrangle and includes part of the end moraine and the broad area south of the end moraine drained by Tunkhannock Creek. This Long Pond Macrosite is one of the most unique ecosystems in the Northeastern US.<sup>10</sup> Numerous plant and animal species of special concern inhabit the community. Long Pond Macrosite is the most important site in PA for the preservation of biodiversity and one of the top sites in eastern US because of the concentration of rare species.

The Monroe County NAI on Page 77 – conclusions about the Long Pond Macrosite:

*“In conclusion, the Long Pond Macrosite Preserve is the jewel in the crown that is the Poconos. It is one of the last remaining areas of substantial size in the Poconos that is fairly undisturbed by human activity... The acid geology and cool mountain climate combine to produce a flora that is distinctly northern in character. All should strive to preserve this national treasure.”*

On the existing pipeline right of way, Page 71 of the Monroe County NAI indicates the following:

*“SP504, located near the Pocono International Raceway entrance, marks a fair population of a state-endangered grass species. This population, currently recovering from recent construction along the gas pipeline, should be checked annually to monitor its viability... Halting herbicide use near the site and mowing the pipeline right-of-way in the early spring or late fall of each year are two management strategies that would promote the grass species”.*

The ELs associated with the Pocono International Raceway are EL-13 through EL 16, and EL AR 2 – all should be surveyed during the growing (warm season), preferably during the flowering period, for the presence of the grass species referenced above prior to the easement construction and expansion.

It’s noted that in EL16 and EL-AR-2, EL14, and EL15, EL14, EL13, EL12, EL11, and EL10 occur within the Long Pond Macrosite. The EL’s associated with Tunkhannock Creek are designated EV or HQ. EL9 occurs in the Poplar Gap Gorge (poplar Creek) (Exceptional Value) (EV), on steep terrain, increasing the potential for sedimentation. In this particular crossing, Transco should strongly consider using trenchless crossings – as the very steep terrain, and quality of the water represent unique circumstances for potential negative impacts on water quality.

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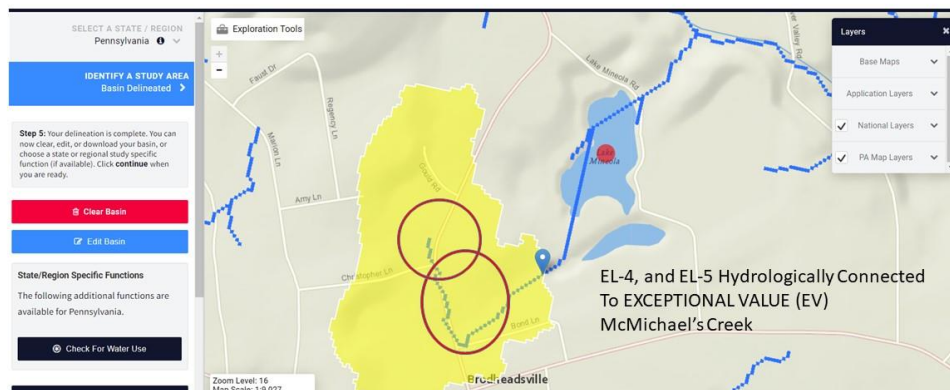
<sup>10</sup> Monroe County Natural Area Inventory, [www.naturalheritage.state.pa.us/cnai\\_pdfs/monroe%20county%20nai%201991\\_1999.pdf](http://www.naturalheritage.state.pa.us/cnai_pdfs/monroe%20county%20nai%201991_1999.pdf) Pennsylvania Natural Heritage Program. 1991 with 1999 Update. Accessed 12.6.2021

For EL10 (Mud Run) (High quality) (HQ), Transco should also strongly consider using trenchless methods. This creek flows year-round, and the expansion of the easement by clearing existing forest will increase the likelihood of thermal pollution and sedimentation.

Considering the documented presence of state endangered plants and animals throughout the Long Pond Macrosite, there's less room for error in this project.<sup>11</sup> One collateral risk is that nearby landowners may opportunistically mow or use herbicide near right-of-ways that were previously not accessible, due to the clearing of trees along their property adjacent to the easement. An expanded pipeline may also attract the attention of ATV and UTV users who live in nearby residential areas with direct access to the expanded easement. Such activity puts at risk the state endangered plants and animals present in the existing easement. Transco should explore methods to restore and expand existing barriers to entry for such activity throughout this sensitive geographic region of the project.

### **McMichael's Creek Watershed, Mineola Marsh and Federally Endangered Bulrush (Exceptional Value)**

According to Streamstats, ( <https://streamstats.usgs.gov/ss/> ) a channel delineation on the wetlands in EL-4 and EL-5 was completed (see diagram below). According to <https://gis.dep.pa.gov/emappa/> this un-named tributary is hydrologically connected to the Exceptional Value (EV) McMichael's Creek. EL-4 is approximately mile 46.1, and EL-5 is approximately mile 46.3 on the proposed project.



**Source: Stream Stats Analysis, Dec 6, 2021 by Alexander Jackson, BWA**

<sup>11</sup> Bulletin of the Torrey Botanical Club 123(4). Pocono Till Barrens: Shrub Savanna Persisting on Soils Favoring Forest  
[http://www.continentalconservation.us/Roger%20Latham%20publications\\_files/Latham%20%26%20al.%201996%20BTBC.pdf](http://www.continentalconservation.us/Roger%20Latham%20publications_files/Latham%20%26%20al.%201996%20BTBC.pdf)

In such exceptional value (EV) waters, and hydrologically connected tributaries, trenchless crossing methods should be considered as an alternative to open cutting or reroutes should be considered. The 75 foot area of disturbance on EL-4 in particular, will disturb a large section of the to-be afflicted wetland. Wetland earth disturbances increase the potential for sedimentation, and thermal pollution. Again, Transco's rationale provided in its application of how an open cut through these and other sensitive HQ and EV waterbodies and wetlands will not cause long term harm or anti-degradation is not supported by the science or experience we have observed along similar pipeline cuts.

EL-4 and EL-5 are associated with the hydrology of Lake Mineola, and the shallow kettle lake which directly influence lake Mineola marsh. Lake Mineola marsh is one of the most important wetlands in the entire state of Pennsylvania, and contains a population of federally endangered bulrush plant species.

We strongly recommend immediate re-analysis of the proposed project in this critical watershed acreage, and consider an alternative pathway. At the very minimum, a full hydrological study of any and all impacts to this specific sensitive wetland should be required.

According to the Monroe County NAI (Reference 1 above). Lake Mineola Marsh in Brodheadsville), Chestnut Hill Township. Lake Mineola Marsh is a robust emergent marsh formed in a shallow kettle lake to the south of Lake Mineola. The occurrence of these species of special concern in the marsh probably relates to the unique hydrological setting of the shallow kettle lake. This is the most important ecological site in the entire Brodheadsville Quadrangle. The protection of the lake's naturally fluctuating water table is of critical importance. The loss of the globally-rare bulrush from Lake Mineola Marsh would be an ecological tragedy at the state, national, and international levels.

Furthermore, Transco denotes the UNT to McMichael's Creek improperly as HQ-CWF, MF in its J-2 PA DEP Aquatic Resource Impact Table (April, 2021) for the Chapter 105 application accessed from the DEP pipeline portal on December 6, 2021. Commenters have only conducted spot checks but it appears that many of the maps and tables and drawings in the application posted on the DEP pipeline portal have inaccurate, missing, and outdated maps, drawings, and tables that do not denote actual existing uses nor does it appear that DEP requests for completeness earlier this summer have been fully implemented by the applicant (see prior joint comment submitted to the record by these commenters on October 18, 2021 regarding incorrect water quality use designations).

### **Antidegradation Requirements Are Not Met to Approve the Applications**

Transco's short ABACT analysis for meeting the state antidegradation requirements contained in Chapters 93, 95, 102 and 105 through various measures provided in the Project design, are inadequate and not protective to ensure no or minimal degradation of special protection streams. BMPs outlined in the erosion and sediment control and site restoration plans will not adequately protect sensitive habitats. Transco evaluated the feasibility of non-discharge alternatives that would be located outside of exceptional value (EV) or high-quality (HQ) watersheds and states that during construction, excavated



trenches will be kept to the minimum width and depth necessary to safely complete construction activities. However, evidence provided shows how pipeline ROWs can be minimized to much smaller widths than what Transco is proposing and that other crossing methods likely can also be employed to limit degradation to HQ and EV waterbodies.

**The DEP should fully consider impacts to and avoidance of preserved open space.**

The variety of harms that would result from the proposed cuts through preserved open space must be fully and fairly considered – whether the open space is preserved by purchase or conservation easement (publicly or privately held).

DEP should require the applicant to consider alternative routes that do not impact public open space. Companies routinely site pipeline routes that impact public open space because these lands are valued at a lower rate when compared to non-preserved lands. FERC must not permit this “savings” to the applicant to drive the siting process. Public and preserved lands must be priced according to their value. DEP must deter this strategy for siting the pipeline and consider the distorted pricing of open space as it evaluates alternative routes for this Project and as it considers the cumulative environmental harms of the proposed pipeline expansion. DEP’s approach to evaluating cumulative impacts gives inadequate consideration to the distorted incentives for pipeline companies to target protected open space – whether protected through purchase or conservation easements.

The protection of open space is necessary to preserve the remarkable resources of the Delaware River watershed. Natural areas are critical for water quality, have more stable soils, provide habitat for plants and animal species, and help maintain the value of historical sites. Loss of open space adversely impacts water quality, aquatic habitat, and the intact ecological health that is otherwise benefitted by the preserved open space. Pipeline passage through open space significantly reduces scenic character and recreational opportunities thereby adversely impacting jobs and economic benefits associated with recreation, vacation and other related industries.

Realtors in the region have asserted at public meetings that the presence, or even the potential presence, of an interstate transmission pipeline of the size proposed by Transco REAE adversely impacts the marketability of nearby homes. FERC must fully and fairly consider these harms and require quantifiable and documented data to support any assertions/findings. Potential impact blast zones and the environmental and property harm it would cause along the entire pipeline corridor if an accident were to happen must also be considered in the analysis.

The impacts to the market value and marketability of homes that will result from the removal of mature vegetation to make way for this additional pipeline loop (both permanent ROW and temporary construction areas that will not be fully restored) must also be fully and fairly considered. Healthy, mature, vegetated buffers along waterways are known to enhance property market values. For example, "Pennypack Park in Philadelphia is credited with a

38% increase in the value of a nearby property."<sup>12</sup> In addition, "[t]wo regional economic surveys documented that conserving forests on residential and commercial sites enhanced property values by an average of 6 to 15% and increased the rate at which units were sold or leased."<sup>13</sup> And in a survey conducted by the National Association of Home Builders, 43% of home buyers paid a premium of up to \$3,000, 30% paid premiums of \$3,000 to \$5,000, and 27% paid premiums of over \$5,000 for homes with trees.<sup>14</sup> To the extent the Transco REAE will be cutting down forests and buffers to expand its ROW and replacing them with low growing grasslands, and to the extent that the forest fragmentation caused by pipeline construction and maintenance will result in additional forest degradation as far as 300 feet back on either side of the ROW, the impacts to home market values and marketability must be accounted for.

**The DEP must fully consider impacts to water resources (including surface water and groundwater) and wetlands, and provide a full accounting of the number of waterways and wetlands to be crossed and irreparably altered.**

Per Transco's Section 401 Aquatic Resource Impact Table (dated 2/27/21) for the Effort Loop construction alone (13.8 miles of 42" pipeline loop thru Monroe County), Transco has identified in its summary table 2.33 acres of permanent impacts to streams, floodway, and wetlands and 1.94 acres of temporary impacts to streams, floodway, and wetlands along the Effort Loop. Yet the breakdown of each waterbody and wetland to be cut, often using an open trench method, does not take into account downstream sedimentation impacts that may occur, nor does the summary table list the total number of proposed cuts.

In addition, where forested buffers are cut, thermal impacts downstream are not accounted for. These cascading downstream watershed impacts are required for a thorough EIS analysis. On the face of it, despite the extremely large number of wetlands and watercourses, Transco claims very little impact. Furthermore, on review, numbers seem to vary from Transco's aquatic resource impact tables and the compensatory mitigation plans. Transco states in the mitigation plans the following:

- "Construction of the Regional Energy Lateral Loop and Existing Compressor Station 515 will result in seventy-seven pipeline associated watercourses and/or floodway crossings (fourteen floodway only)."
- "Construction of the Project will result in temporary impacts to one hundred and eight PEM, PSS and PFO wetlands. Permanent functional conversion impacts (PFO/PSS to PEM) wetlands located within the proposed maintained pipeline ROW will occur to 39 wetlands, for

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<sup>12</sup> Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, August, 1998, p. 134

<sup>13</sup> Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, August, 1998 Citing two studies by Morales and Weyerhauser

<sup>14</sup> Cheryl Kollin, "Designing with Nature and Showing the Benefits", *Land Development*, National Association of Home Builders, Winter, 1997

a total of 1.67 acres. Temporary functional conversion impacts of wetlands located within the temporary workspace will occur to 47 wetlands, for a total of 3.47 acres.”

Furthermore, when DRN tallied the stream and wetland cuts from the aquatic resource summary table overall there are 114 EV wetlands and 37 HQ streams to be impacted. For these special protection streams, DEP must require a thorough analysis that ensures there is no degradation of these streams and wetlands. What monitoring will be required both upstream and downstream of cuts to ensure no degradation? Will temperature probes be installed for monitoring for example? Annual mitigation and restoration monitoring by the pipeline companies alone is not sufficient. Taking the word of the pipeline company that much of these are “temporary impacts” and that the “hydrology will be restored” is not good enough nor is it prudent being the track record of altered conditions for waterbodies cut by other pipeline projects. A thorough check and JD by the Army Corps are desperately needed to ensure accurate delineations.

Among the watersheds to be cut for the Effort Loop alone proposed to cut across 13.8 miles of Monroe County - often with multiple watershed cuts: Tunkhannock Creek, Pohopoco Creek, McMichael Creek, and Mud Run - all of which have special protection designations. Take note too of Transco’s discrepancies of designated uses outlined in October 18, 2021 joint comment by Pennfuture, Clean Air Council, and DRN to the PADEP.

For the Regional Energy Lateral Loop proposed to cut across 22.3 miles of Luzerne County - often with multiple watershed cuts: Shades Creek, Little Shades Creek, Meadow Run, Bear Creek, Little Bear Creek, and Mill Creek are just some of the special protection HQ or EV streams to be cut by the pipeline. In addition, Transco proposes to create another pipe across the Susquehanna River located further north of the existing ROW. Along this proposed Regional Energy Lateral loop there are multiple instances beyond the Susquehanna River crossing where the pipeline path is proposed to diverge from the existing Transco pipeline which will inflict more harm nearby that may be unnecessary.

The DEP should require Transco to justify why these variances and diversions away from the existing pipeline ROW path are needed instead of co-locating the new pipeline loop within and adjacent the existing ROW. It is concerning that Transco has already failed a very fundamental task of resource identification for the Project, as such, this must raise red flags for careful scrutiny in the future by DEP of assertions made by Transco regarding environmental harms resulting from the Project. It appears already that not only is Transco under-counting and under-valuing the resources harmed, but that it is also proposing alternative routes based on political maneuvering rather than reducing harms or collocating.

The proposed Transco REAE project, as demonstrated by the installation of other pipeline projects in our region and nation, will create new pathways for water flow, thereby altering the hydrologic pattern of the watershed and adversely impacting (in both quantity, quality and seasonal timing) streams, wetlands and drinking water sources.

There is also potential for chemical contamination of water resources. Current practices call for the ROW to be clear of vegetative matter. Herbicides are frequently used to accomplish this task. Creating and maintaining the ROW could result in increased and repeated herbicide use on the federal, state, and county parklands along the ROW and, as run-off capacity will be intensified in the ROW due to lack of vegetation and forest cover and due to increased soil compaction resulting from pipeline construction, there will be an increased level of herbicides discharging directly (or through stormwater systems) into tributary streams, wetlands and the downstream Delaware River.

In addition, the removal of vegetation and increased soil compaction will create a direct route for stormwater runoff from neighboring lands which may be treated by other property owners with herbicides, pesticides, fertilizers and/or other chemicals that could/would then be transported and discharged into nearby water bodies either directly or through stormwater collection systems. The EIS must consider and question the necessity of the proposed width of permanent clearance considering the harms it poses to the environment. The ease of aerial inspection of the pipeline should not, and cannot, trump the resulting environmental harms associated with gratuitously wide ROW permanent clearings.

Beyond chemical contamination, water quality impacts will also result from an increase in suspended solids in the water due to erosion resulting from the increased volume of stormwater runoff that will result from removal of vegetation and increased soil compaction and from the removal of streamside vegetation thus depriving streams of the natural armoring of vegetative root systems. Upon entering the stream ecosystem, this increase in suspended solids will result in a reduction to the streams' water bearing capacity, in turn reducing oxygen availability and impacting aquatic plant and animal species, including habitat for fish reproduction and macroinvertebrate diversity. Each of these factors must be individually reviewed at all water crossings.

According to expert observation, pipeline trenches can divert groundwater and as a result "permanently alter the hydrologic cycle in the vicinity of the pipeline right-of-way. This alteration will decrease the water resources available to support wetland hydrology and stream base flow in the summer and fall dry season."<sup>15</sup> The compacted soils resulting from pipeline construction increase rainfall runoff and reduce groundwater infiltration. This can cause further negative impacts on wetland hydrology and stream baseflow in the area of the pipeline.<sup>16</sup> "Increased runoff as a result of compacted soils, and increased drainage of shallow ground water" around a pipeline, due to previous and proposed construction practices, can increase "surface water flow and groundwater discharge in the wet winter and spring seasons and decrease summer and fall groundwater discharge which supports wetland hydrology and stream base flow."<sup>17</sup> The result of reduced groundwater discharge during the dry summer and fall months can decrease the size of supported wetlands. So the result is too much or too little depending on the time of year. Another result of the altered flows can be

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<sup>15</sup> Affidavit of Peter M. Demicco, DRN v. PA DEP an TGP NEUP, 2012.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

to decrease stream baseflow that supports aquatic life and trout habitat in headwater streams in the dry summer and fall period.

Furthermore, the installation of the Project will involve drilling and digging into the bedrock, the potential effects of this must be considered. If these activities result in interception of the water table, dewatering activities would result in the localized drawdowns of water table elevation and could impact local wells. Construction activities may also result in contamination of groundwater by creating a direct flow of contaminants, including herbicides, into local aquifers. DEP must determine whether any of the aquifers along the ROW are sole-source as this would magnify any negative impacts of construction. Protection of groundwater is a crucial concern for residents being impacted by the gas pipeline, and therefore, the negative impacts to groundwater quality and quantity must be heavily weighted in FERC's review of the public necessity of this Project. This review must also take into account any costs that would be borne by these municipalities if the Project depleted the quality of the water supply and groundwater to a point that water treatment facilities become necessary.

Furthermore, increasing the runoff potential of soils due to compaction will negatively impact groundwater recharge areas surrounding the ROW. By removing the topsoil layer and associated forest litter and humus, runoff will decrease the soil porosity and moisture retention capacity. This will induce even greater levels of runoff and will damage the groundwater recharge capabilities of the ecosystem. The decreased ability to absorb water resulting in runoff and sedimentation severely decreases water quality. Previous FERC jurisdictional projects have resulted in significant soil compaction issues. The EIS must identify ways in which previous soil compaction problems can be avoided or properly remediated. A restatement of previous practices would be unacceptable.

To determine current water quality, the EIS must include a survey of the established benthic community in potentially impacted streams. This should include the composition, quantity, and diversity of the community using standardized sampling protocols consistent with the state's assessments. Anti-degradation streams that have special designations warrant special attention and protection, especially when a tributary has Category 1, Exceptional Value or High Quality designation.

Furthermore, if a stream has an existing TMDL and is not meeting its existing water quality, more attention is also warranted. Potential water quality impacts should also be evaluated including construction related impacts that include the possibility of fuel spills, compaction from parking and staging equipment and contamination of runoff and further erosion and sedimentation.

Any potential channel relocations that occur due to construction must be studied as an impact. Installing the Project will require stream diversions that will also impact wetland areas. These areas of stream channel modification must be identified so that the impacts on wildlife resources can be fully examined with the coordination of NPS, Fish and Wildlife Service, and New Jersey and Pennsylvania environmental agencies.

*Adverse impacts to the multiple wetlands to be crossed need greater due care, attention and assessment than we have seen with previous pipeline environmental reviews*

Despite their tremendous value, more than half of America's original wetlands have been lost to development, agriculture, mining, hydrology alterations and pollution.<sup>18</sup> And, each year we continue to decimate nearly 500,000 additional acres of wetlands.<sup>19</sup>

Loss of wetlands increases soil erosion, damages water quality and allows increased sedimentation and polluted runoff into streams.<sup>20</sup> Increased stormwater flows can upset the "dynamic equilibrium" that exists between wetlands and the surrounding watershed. Changes in volume or quality of runoff to wetlands can affect the biological community and ecological functions of a wetland. Generally, wetlands work as an integrated system with other wetlands in a watershed. When assessing the value, or lost value, of wetlands, it is important to recognize this critical interrelationship.<sup>21</sup> Below are just some of the benefits of wetlands that FERC must fully assess in its review.

Wetlands provide productive and diverse ecosystems for both aquatic and terrestrial wildlife<sup>22</sup> and they produce biomass for the base of the food chain.<sup>23</sup> Wetlands of all sizes, both large and small, have been demonstrated to provide important habitat for a wide variety of plants and animals, many of which could not survive without them.<sup>24</sup> Forty-two percent of the "total U.S. threatened and endangered species depend upon wetlands for survival."<sup>25</sup> Wetlands provide a diverse and complex set of ecosystems -- niches that function as an irreplaceable ecological unit.<sup>26</sup>

Wetlands act as a natural pollution filter thereby providing irreplaceable water quality benefits. The dense vegetation found in wetlands filters out sediment, nutrients and other pollutants.<sup>27</sup> Wetlands can also filter pesticides and heavy metals and can reduce water-borne bacterial contamination through microbial action.<sup>28</sup>

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<sup>18</sup> "America's Wetlands, Our Vital Link Between Land and Water", US EPA Office of Wetlands Protection, Office of Water, Doc. No. OPA-87-016, February 1988, p. 6.

<sup>19</sup> Michael J. Caduto, *Pond and Brook, A Guide to Nature in Freshwater Environments*, University Press of New England, 1985

<sup>20</sup> Clean Water Network and NRDC, "Wetlands for Clean Water, How Wetlands Protect Rivers, Lakes and Coastal Waters from Pollution", April 1997

<sup>21</sup> *Ibid.* 15, p. 4.

<sup>22</sup> National Wildlife Federation Fact Sheet -- [nwf.org/wetlands/facts/benefits.html](http://nwf.org/wetlands/facts/benefits.html)

<sup>23</sup> Michael J. Caduto, *Pond and Brook, A Guide to Nature in Freshwater Environments*, University Press of New England, 1985, p. 29

<sup>24</sup> National Wildlife Federation, "Status Report of Our Nation's Wetlands", October 1987.

<sup>25</sup> DNREC and Brandywine Conservancy, [Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use](#), September, 1997, p. 2-11.

<sup>26</sup> *Ibid.* 21

<sup>27</sup> Clean Water Network and NRDC, "Wetlands for Clean Water, How Wetlands Protect Rivers, Lakes and Coastal Waters from Pollution", April 1997

<sup>28</sup> *Id.*

Wetlands provide flood control, erosion control and groundwater recharge. Wetlands are part of nature's sponge, holding water, feeding plants, and slowly recharging aquifers. Wetlands effectively absorb and hold floodwaters thereby protecting adjacent and downstream properties from flood damage.<sup>29</sup> Depending on the soil type, wetlands can contain 1 to 1.5 million gallons of water per acre, thereby alleviating flooding by holding excess water like a sponge.<sup>30</sup> At the same time, wetland vegetation helps to slow the speed of floodwaters - this in combination with the storage capabilities of wetlands can both lower flood heights and reduce the erosive potential of floodwaters.<sup>31</sup> Wetlands can also desynchronize flood peak flows and velocities during small runoff events.<sup>32</sup>

Wetland delineations and assessment of values and functions of wetlands impacted by the Project directly or indirectly are needed. As part of this analysis, hydrology, vegetation, and soils must be examined. Assessment of function and value should consider all ecosystem services being provided that are listed above, such as groundwater recharge, water quality and sedimentation, wildlife habitat, flood protection, biological diversity, recreation, and aesthetics, so that potential impacts, alternatives, and avoidance of wetlands and their important natural buffers can be properly assessed.<sup>33</sup>

The DEP must fully assess impacts to wetlands including, but not limited to changes in water levels, flow characteristics, and circulation patterns, the impacts of temporary and permanent alteration of vegetation in and around wetlands, altered temperatures, changed light, altered humidity, altered groundwater or surface water flows, and/or altered flooding frequencies due to the Project. Changes in substrate conditions may affect the ability of the wetland to sustain vegetation and wildlife populations including sensitive amphibian populations. For example, repeated maintenance and lagging restoration practices that span over multiple seasons/years could impact important amphibian and fish migrations and critical reproduction periods if biological windows are not considered.

It has been observed and documented by DRN and Conservation District staff around prior pipeline projects that once the pipeline is moving gas, the final restoration phases by the operator are often not a priority leading to inflicted or unnecessary additional harm to sensitive species, due to improper timing or unnecessary delays. Increased run-off as addressed above may introduce contaminants or more sedimentation to the ecosystem. Increased nutrient loading could produce algal blooms and reduce available oxygen in the water. Any impacts to the physical characteristics of wetlands resulting from the construction and operation of the Project and any associated appurtenances of land, water, air or light transformations must be included in any analysis.

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<sup>29</sup> *Ibid.* 15, p. 4

<sup>30</sup> Bob Schildgen, "Unnatural Disasters", *Sierra*, June 1999

<sup>31</sup> *Ibid.* 15, p. 4

<sup>32</sup> *Ibid.* 22

<sup>33</sup> See Schmid and Company Inc. (2014). The effects of converting forest or scrub wetlands to herbaceous wetlands in Pennsylvania. Prepared for the Delaware Riverkeeper Network, Bristol, Pennsylvania. (Attachment 17).

## *Adverse Impacts to Floodplains, Including Their Permanent Alteration, Must Be Given Full Consideration*

Floodplains vegetated with trees and shrubs can be four times as effective at retarding flood flows as grassy areas.<sup>34</sup> In addition, naturally vegetated floodplains provide breeding and feeding grounds for both fish and wildlife, they "create and enhance waterfowl habitat", and they "protect habitat for rare and endangered species."<sup>35</sup> Naturally vegetated floodplains are generally layered with leaf and organic matter which result in organic soils with high porosity and a greater capacity for holding water.<sup>36</sup> The floodplain, in this natural state, is a riparian ecosystem that needs the overbank flows that the natural watershed's hydrology provides in order to remain healthy and in balance.<sup>37</sup>

According to the U.S. Environmental Protection Agency, the number one source of pollution to our nation's waterways is from nonpoint sources, including pollution from floodwaters, washed from the land in stormwater runoff.<sup>38</sup> About 40% of the nation's waterways are polluted as a result.<sup>39</sup> Floodplains play a key role in reducing stormwater flows and containing floods, filtering out nonpoint source pollution, thereby reducing pollutant loading and protecting water quality.

The benefits of naturally vegetated and healthy floodplains:

- Stores and slows floodwaters;
- Intercepts overland flows, capturing sediment;
- Stabilizes streambanks, preventing erosion;
- Protects wetlands and other critical habitats;
- Replenishes groundwater aquifer;
- Filters out and/or transforms pollution;
- Provides recreation and education;
- Trees and other riparian vegetation: provide wildlife habitat; process nutrients and other would-be pollutants; shade and cool waterways; provide food for wildlife and stream insects (detritus); provide beauty and refuge.

The Delaware River's health and the health of its tributary streams are threatened by loss of its floodplain's function and the resulting increase in stormwater and floodwater. Adverse impacts to beneficial floodplain values must be considered. These include the accelerated runoff produced along the ROW that will result in more erosion and deposition

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<sup>34</sup> Schmid and Company Inc. (2014). The effects of converting forest or scrub wetlands to herbaceous wetlands in Pennsylvania. Prepared for the Delaware Riverkeeper Network, Bristol, Pennsylvania

<sup>35</sup> *Ibid* 22.

<sup>36</sup> *Ibid* 22.

<sup>37</sup> Poff, Allan, Bain, Karr, Prestergaard, Richter, Sparks, and Stromberg, "The Natural Flow Regime", *BioScience*, Vol. 47, No. 11.

<sup>38</sup> Chester L. Arnold Jr., and C. James Gibbons, "Impervious Surface Coverage, the Emergence of a Key Environmental Indicator", *APA Journal*, Spring 1996, p. 245.

<sup>39</sup> *Id.*



within streams, increased transport and loading of contaminants, increase in flood peaks due to accelerated runoff (in turn reducing the amount of water entering the ground), decrease in groundwater recharge, blocked or diverted groundwater flow, soil compaction, and the removal of habitat and food sources for wildlife and aquatic life. These impacts can also produce a “ripple” effect by upsetting the balanced ecosystem of the landscape through construction activities. The DEP should consider the short term, long-term, and cumulative impacts of these alterations.

Unnatural flood levels and flood damages are experienced by communities living along the Delaware River and tributary streams. In addition, removal of vegetation along water systems removes the natural armoring that helps prevent accelerated erosion from unnaturally high flood flows. The ramifications, individually and cumulatively, of the multitude of proposed stream crossings for flooding, flood peaks, flood damages and erosion must be considered.

*The Destruction of Naturally Vegetated and Forested Buffers Along All Wetlands and Waterways Must Be Given Full Consideration*

Healthy and vegetated streamside buffers serve our communities by:

- Providing flood storage,<sup>40</sup> reducing flood peaks,<sup>41</sup> and slowing the velocity of floodwaters,<sup>42</sup> thereby reducing flooding and damaging flows in downstream and nearby communities;
- Protecting and enhancing water quality by preventing and filtering pollution<sup>43</sup> and enhancing the ability of the neighboring stream to process pollutants,<sup>44</sup> thereby protecting drinking water supplies, recreational uses of our waterways, commercial and recreational fisheries, ecotourism, and business operations that need clean water;
- Recharging aquifers that supply drinking water and base flow to streams;<sup>45</sup>

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<sup>40</sup> Tourbier, J. Toby "Open Space Through Stormwater Management, Helping to Structure Growth on the Urban Fringe"

<sup>41</sup> Army Corps of Engineers WRAP, "Technical and Scientific Considerations for Upland and Riparian Buffers Strips in the Section 404 Permit Process", ERDC-WRAP-01-6, May 2002, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

<sup>42</sup> *Id.*

<sup>43</sup> NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), USEPA, "Pesticide Tolerance Reassessment and Re-registration, Terbufos IRED Facts", EPA 738-F-01-015, October 2001; *Id.*

<sup>44</sup> Sweeney & Blaine, "Resurrecting the In-Stream Side of Riparian Forests", *Journal of Contemporary Water Research & Education*, Issue 136, June 2007.

<sup>45</sup> Castelle, Johnson, Conolly, "Wetland and Stream Buffer Size Requirements – A Review", *J. Environ. Qual.* 23:878-882 (1994); NJAC 7:8 NJDEP Agency Proposal Document at NJAC 7:8-5.5(h), page 77; *Ibid.* 38

- Providing and enhancing birding, fishing, hiking and other recreational opportunities that are so critical to our region's aesthetic beauty and community quality of life;
- Providing and enhancing the quantity and quality of habitat<sup>46</sup> to aquatic life, animals, birds and plants that are important to our watershed ecologically, economically, recreationally and psychologically;
- Providing organic matter critical for supporting aquatic organisms;<sup>47</sup>
- Providing shading and thereby providing water temperature control<sup>48</sup> important for the quality of the stream including the health of the habitats and aquatic organisms present;
- Reducing flood damages by ensuring structure-free zones devoid of structures to be harmed;
- Protecting public and private lands from erosion and helping streambanks maintain their integrity in order to prevent/minimize the costs and harms of sedimentation and restoration;<sup>49</sup>
- Increasing the market value and marketability of nearby homes and communities;<sup>50</sup>
- Increasing the opportunity for and success of ecotourism businesses dependent on the aesthetic beauty of the river and its ecological health; and
- Maintaining the unique ecological and historical qualities of our River and region that are an international draw.<sup>51</sup>

Vegetated buffers and floodplain areas are an important food source for aquatic microorganisms, invertebrates and fish.<sup>52</sup> In small headwater streams, as much as 60 to 90 percent of the organic food base comes from surrounding forests.<sup>53</sup> The life cycles of the

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<sup>46</sup> *Ibid.* 38, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995"

<sup>47</sup> *Ibid.* 38, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

<sup>48</sup> *Ibid.* 38, citing DeBano and Schmidt 1990; O'Laughlin and Belt 1995".

<sup>49</sup> Water, Science, and Technology Board, Board of Environmental Studies and Technology, "Riparian Areas: Functions and Strategies for Management", 2002, citing Swanson, et al; Center for Watershed Protection, "Impacts of Impervious Cover on Aquatic Systems", Watershed Protection Research Monograph No. 1, March 2003; *Ibid.* 38.

<sup>50</sup> Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, August, 1998, Pg. 134, Lutzenhiser, M. and N.R. Netusil. "The Effect of Open Spaces on a Home's Sale Price." *Contemporary Economic Policy* 19.3 (2001): 291-298.

<sup>51</sup> For example, "Pennypack Park in Philadelphia is credited with a 38% increase in the value of a nearby property." Center for Watershed Protection, *Better Site Design: A Handbook for Changing Development Rules in Your Community*, August, 1998, p. 134

<sup>52</sup> J.C. Klapproth & J.E. Johnson, Virginia Cooperative Extension, *Understanding the Science Behind Riparian Forest Buffers: Effectson Plan and Animal Communities*, October 2000, Publication number 420-152.

<sup>53</sup> *Id.*

aquatic invertebrates and in turn the fish are closely tied to these organic inputs from the forest.<sup>54</sup> In the larger waterbodies the vegetation provides refuge as well as havens where the smaller fish can find food.<sup>55</sup> The roots, fallen logs, pools, overhanging branches and other habitats that vegetation along the banks creates provides important habitat for fish young to old.<sup>56</sup>

Multiple studies have documented that waterways surrounded by mature woodlands provide a greater variety of important aquatic habitat, support a greater diversity of fish species, and support fish in healthier physical condition than waterways where the forest cover has been removed.<sup>57</sup> Forested streams also provide temperature protections important for aquatic life.<sup>58</sup> The overhead cover provided by forested streamside lands provides shading and temperature control – this directly affects the amount of oxygen the water can support.<sup>59</sup> Increased temperatures have been found to alter the release rate of nutrients from suspended sediments.<sup>60</sup> Just small increases in temperature can increase substantially the amount of phosphorus released into water.<sup>61</sup>

Shading from buffers reduces overall temperatures but also reduces the daily and seasonal fluctuations in stream temperature. Moderation of stream temperatures is important for healthy habitat. Studies have concluded that removal of streamside vegetation can result in a stream temperature increase of 6 to 9 degrees Centigrade.<sup>62</sup> Just a 9-degree increase can cause heavy growth of filamentous algae.<sup>63</sup> Growth of parasitic bacteria is also encouraged by warmer temperatures.<sup>64</sup> And some species simply cannot survive in warmer water so even seemingly slight temperature changes (the 6 to 9 degree range) can shift the structure of the aquatic community.<sup>65</sup>

Removal of forests and vegetation results in polluted runoff, which because of the lack of a vegetated buffer, will enter directly the neighboring stream or river. This kind of polluted runoff includes sediment, nutrients, pesticides, animal waste and more. Too many nutrients in a waterbody, including both phosphorus and nitrogen, encourages an overgrowth of algae and other aquatic plants. Buffers are beneficial also for protecting waterways and communities from other pollutants such as herbicides and pesticides.

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<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> *Id.*

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

<sup>62</sup> Leavitt, J. 1998. "The Functions of Riparian Buffers in Urban Watersheds", page 4, Master of Science Degree Report, University of Washington, Seattle, WA.

<sup>63</sup> *Ibid.* 49

<sup>64</sup> *Ibid.* 49

<sup>65</sup> *Ibid.* 49

Vegetation on stream banks can help filter sediment-laden runoff that would otherwise enter a stream and can reduce and prevent non-natural erosion resulting from increasing stormwater runoff levels upstream and introducing more sediment into the water column. Sediment can block the penetration of light in water, affecting the growth and reproduction of aquatic plants.<sup>66</sup> When sediment settles it can cover stream bottom habitats interfering with the feeding or reproduction of fish and aquatic insects dependent upon them.<sup>67</sup> Too much sediment can clog the gills of fish and, if at high enough levels, result in fish death.<sup>68</sup>

When reaches of a stream with natural function are intersected with dysfunctional reaches there is a net loss in the ability of the stream to provide their water cleaning and protection benefits including processing of nutrients, pesticides, and organic matter.<sup>69</sup>

Vegetated buffers prevent erosion of stream banks and adjacent lands – including both public lands and private lands. Root systems of woody shrubs and trees do a better job of anchoring these soils — this is a function that turf grass, or low growing vegetation as is often found at pipeline stream crossings, simply cannot do effectively.<sup>70</sup> Stream reaches that are forested “exhibit 20 – 33% slower channel migration and lower floodplain accretion rates of sediment and thereby provide more stability than deforested channels.”<sup>71</sup>

Research has concluded that forested buffer systems, as opposed to grassed systems or other herbaceous plants, provide an enhanced ability to sequester contaminants instream and to degrade them; this is primarily due to increased biological activity. Increased nitrogen attenuation and pesticide degradation are particularly associated with forested stream buffers.<sup>72</sup>

The removal of healthy forested buffers along the many stream crossings proposed by Transco REAE must be assessed – individually and cumulatively. In addition, when the stream crossing includes a cut through a pre-existing mature and healthy forest the degradation of the forest on either side of the Right of Way that results from this forest fragmentation needs also to be considered, both in terms of stream impacts and forest impacts.

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<sup>66</sup> David Welsch, Riparian Forest Buffers, US Dept of Agriculture Forest Service, NA-PR-07-91, <http://www.na.fs.fed.us/spfo/pubs/n%5Fresource/riparianforests/>

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> B.W. Sweeney, Bott, Jackson, Kaplan, Newbold, Standley, Hession and Horwitz, Riparian deforestation, stream narrowing, and loss of stream ecosystem services, Proceedings of the National Academy of Sciences of the United States of American, Vol 101, No. 39, Sept 28, 2004.

<sup>70</sup> National Research Council. 2002. Riparian Areas: Functions and Strategies for Management. Water, Science, and Technology Board, Board of Environmental Studies and Technology, National Academy Press, Washington, DC. Also see Stroud Water Research Center, Protecting Headwaters: The Scientific Basis for Safeguarding Stream and River Ecosystems, 2008.

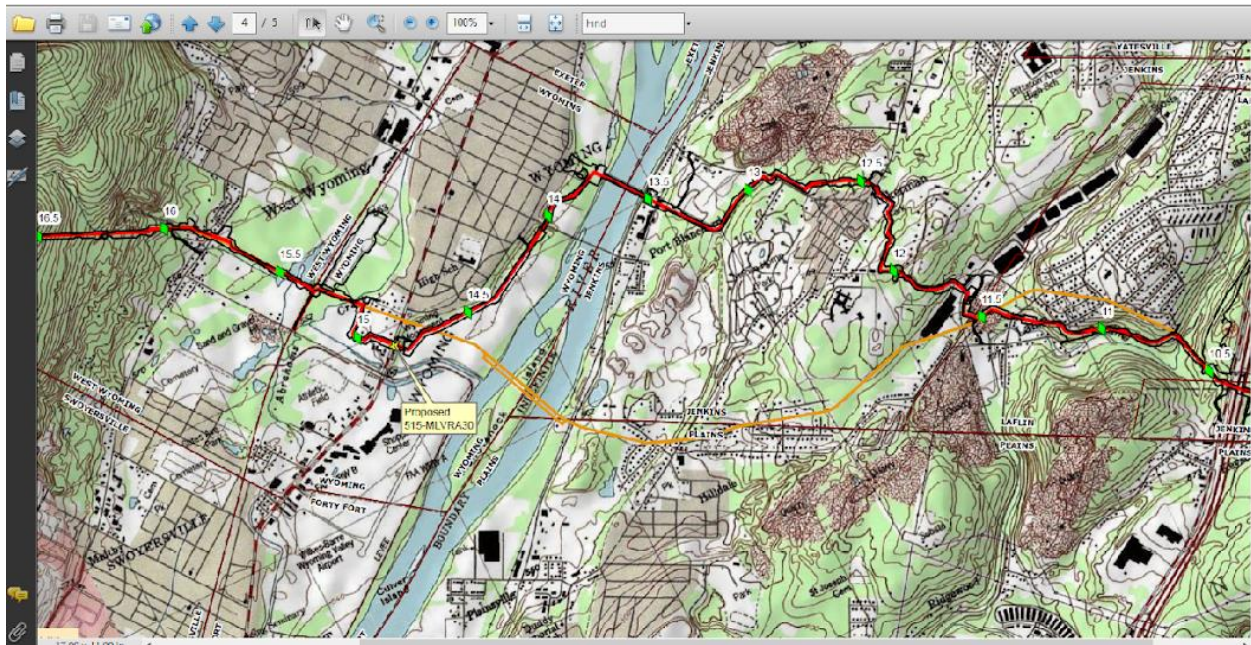
<sup>71</sup> Sweeney, et al, Riparian deforestation, stream narrowing, and loss of stream ecosystem services. 2003.

<sup>72</sup> Sweeney, B. W., et al. 2004. Riparian deforestation, stream narrowing, and loss of stream ecosystem services. PNAS, September 2004; 101: 14132–14137.

**The DEP should closely examine impacts of new pipeline that will not be co-located with existing pipeline.**

As pointed out in various parts of this comment, DEP should require Transco to justify the need for not collocating along the existing route. It appears that the 22.3 mile regional Energy Lateral loop in Luzerne has multiple places where the proposed route diverges away from the already impacted Transco ROW, including the crossing to the Susquehanna River (screenshot of Susquehanna crossing below – red line is the proposed route/yellow line is the original Transco route). In some instances, it appears that the new route is designed to avoid the existing ROW where housing developments have been built but this may be at the environmental expense of the route cutting through more natural and forested habitats, wetlands, streams or sensitive steep slopes. DRN asserts cutting across manicured lawn in subdivisions for a pipeline ROW is far less impactful to the environment than cutting across forest and other natural sensitive habitats; the EIS should require Transco to justify why it may propose to sacrifice forest, streams or preserved lands over paying landowners more money to cut within the existing already impacted boundary where houses may have sprouted up around the original Transco pipeline. For each segment that is not co-located, a full justification into why colocation is not possible.

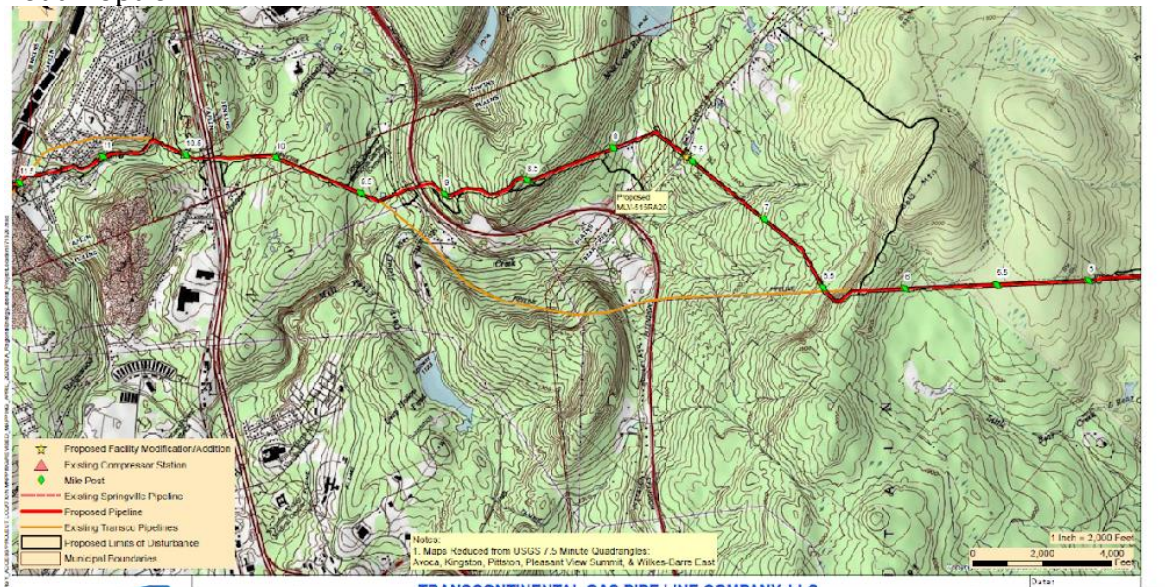
From the topographical map, below it also appears quarrying and coal or culm refuse piles are present near the proposed pipeline route. The harms of trenching and installing an explosive gas pipeline near these industrial uses where blasting for quarrying and fuel/culm waste is nearby must be considered. DEP should also take note of the high school location just to the west of the River and pipeline as well. Transco must thoroughly account and justify its project that could lead to these public safety concerns.



**Figure REL-3 - Proposed Susquehanna River Crossing deviation**

For the 13.8-mile Effort Loop, there appears to be fewer variances away from the existing pipeline ROW. Furthermore, from Transco's 3/17/21 Crossing Photographic Documentation Maps - Figure Number 9 (EL-8) that depicts MP 50.9 the proposed route looks to be located within the existing ROW. A duplicate of Figure 9 (EL-9) (is this a mistake in diagram numbers by Transco?) also depicts a cut over at MP 52.6 that appears to align the proposed route back into the existing ROW as well. This type of collocation within the already cleared and impacted ROW (rather than expanding the ROW adjacent to the active ROW) is certainly a better option for the adjacent habitats to avoid more disturbance along the edge as the ROW expands. If this collocation within the disturbed corridor is possible in some places, DRN would suggest the EIS analysis require Transco to justify why this is not an option along other areas of the ROW, especially where stream crossings, forests, wetlands, and other natural habitats are being proposed to be cut.

For example, Figure: REL-2 (diagram below – red line is proposed REAE route/yellow line is the existing Transco pipeline) shows an extremely steep sloped proposed greenfield route from 6.5MP-9.5MP. It is unclear why Transco cannot collocate within the existing Transco line to the south which is also steep but already has been impacted. The proposed route also appears to cut across a headwater tributary between 7.0 and 7.5MP. Transco must justify and share its analysis for each of these deviations and greenfield workarounds and why the original route is not a viable option as well as why locating within the active ROW is not an option.



**Figure REL-2 Proposed Deviation**

**The DEP must fully consider impacts to fisheries and benthic invertebrates.**

Transco REAE proposes to cut across multiple Class A Wild trout streams and naturally producing wild trout streams, which will also impact associated exceptional value (EV) wetlands. Exceptional value wetlands shall not be degraded. Transco must explain how these trout streams and EV wetlands will be monitored and not degraded by pipeline cuts and what Transco shares in its application is woefully inadequate. Correspondence

from the PAFBC (October 6, 2020) lists three species of rare mussels that are known to be present in the vicinity of the Susquehanna River pipeline crossing - Elktoe (*Alasmidonta marginata*, Rare - S4); Green Floater (*Lasmigona subviridis*, Imperiled - S2); and Triangle Floater (*Alasmidonta undulata*, Rare) and notes that additional surveys are needed.

One in ten of North America's freshwater mussel species has gone extinct in this century. Meanwhile, 75% of the remaining species are either rare or imperiled. This alarming decline is directly tied to the degradation and loss of essential habitat, and the invasion of exotic species such as the Asian clam. Exotic species compete for space and food with native mussels. Destruction of freshwater mussel habitat has ranged from dam construction, channelization, and dredging to siltation and contaminants. Open pipeline cuts cause siltation that can imperil these species that are already struggling. PAFBC notes if an HDD is conducted across the Susquehanna these mussel surveys, which should be conducted between May 15 to October 1, may be avoided. These surveys should be conducted regardless of the type of crossing. Protection of these vulnerable species and the benefits mussels provide to water quality health by filtration must be considered. We would also note here as above, that Transco maps include a northern crossing to the Susquehanna River that is not collocated with the original pipeline ROW - Transco should provide more details as to why collocation is not being pursued for this major River crossing of the Susquehanna River.

Benthic invertebrates are impacted during the construction phase of a pipeline whenever any of the open trench cut methods are used. Changes in downstream diversity and structure of benthic invertebrate communities can result both in the short and the long term. During the time of construction, direct damage and habitat destruction occurs including cascading effects to other ecosystem services otherwise provided by the invertebrates - including as food for other dependent species, the water quality benefits provided by invertebrates helping with nutrient breakdown, and the breakdown of instream detritus creating food for other species.<sup>73</sup> These impacts must be thoroughly considered.

Using the open trench cut method of crossing can affect fish, including direct harm but also by reducing the suitability of habitat including for eggs, juveniles and overwintering.<sup>74</sup> Inadvertent returns of HDD fluid can also cause harm. Fish exposed to elevated suspended solids levels can experience reduced feeding rates, physical discomfort or damage from the abrasive materials on their gills, decreased instream visibility, reduced food supply, and increased competition as fish attempt to move to cleaner waters.<sup>75</sup> For example, the filling of riffles not only can have adverse impacts for invertebrates and fish, in terms of taking important habitat, but it can also diminish the ability of the riffles to help create oxygen important for aquatic life.<sup>76</sup>

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<sup>73</sup> Sweeney, B. W., et al. 2004. Riparian deforestation, stream narrowing, and loss of stream ecosystem services. PNAS, September 2004; 101: 14132-14137

<sup>74</sup> *Ibid* 1.

<sup>75</sup> Pipeline Associated Watercourse Crossings, 3<sup>rd</sup> Edition, publication prepared for CAPP, CEPA, and CGA by Tera Environmental Consultants

<sup>76</sup> *Ibid* 1.

Over time, these impacts can depress the immune system of fish, result in lower growth rates, result in increased stress on individuals and populations, cause damage to the gills – all of which can result in a decline in fish and population health and survival rates.<sup>77</sup> This of course all gets compounded by adverse effects to the suitability of habitat for eggs and juveniles necessary to support the overall community and population.<sup>78</sup> Additionally, downstream sedimentation and also disruption of flows during crossing activities can result in areas of the stream that are shallower or dewatered, thereby taking preferred habitat.<sup>79</sup> These impacts must be thoroughly considered – including both short term and long term impacts.

All of the aquatic, fish, amphibian and invertebrate species located in and/or around the streams, rivers and/or wetlands to be crossed or impacted by the project must be thoroughly catalogued, their population status considered, and the ramifications of the Transco REAE pipeline construction and operation on aquatic individuals and communities must be analyzed. This is especially important for anti-degradation streams as well as impaired streams on the 303(d) list. For example, the headwater streams impacted by the Project should be surveyed for native brook trout. The crossing of multiple streams, including trout waters, will have a large impact on the trout populations and spawning in the region, especially during construction, and will degrade the waterways long after the Project is completed.

Not only must the impact on present species be assessed, but the impact on habitat potential for species that once inhabited the area, or could inhabit it in the future if properly protected must also be considered. Among the impacts resulting from construction of the Project, the Department should also examine impacts to all aquatic ecosystems caused by the channelization of groundwater and surface water to new areas as it runs parallel to the new pipeline. For example, a gas pipeline installation that crossed the Musconetcong River in Asbury, New Jersey resulted in an alteration in the channelization of groundwater towards running parallel with the pipeline and away from the river, decreasing water levels in the river and negatively impacting trout spawning and macroinvertebrate populations. Dewatering of streams also compound the other impacts of a warming planet due to climate change.

Finally, the impact of warming temperatures caused by climate change (and the burning of natural gas from fracking which will be exacerbated with this pipeline) is actively affecting the long term viability of Pennsylvania's trout streams. As the climate warms, the water temperatures of these streams increase which lowers the dissolved oxygen levels that are required of these sensitive cold water species (i.e. cold water holds more oxygen). This calculation and the direct impact of warmer temperatures and extreme weather conditions on these aquatic species and the prized recreational fishing streams/recreational costs for the long term caused by burning fracked gas must be considered as well as the direct forest

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<sup>77</sup> *Ibid* 1.

<sup>78</sup> *Ibid* 1.

<sup>79</sup> *Ibid* 1.



cuts and loss of instream habitat from the pipeline cut itself.

**The Applications must fully catalogue, consider, and review impacts to forested and scrub shrub habitats and dependent species as well as forest and soil carbon sinks.**

The Project, as proposed, requires the removal of vegetation from the ROW. This will have a multitude of direct and secondary effects including increased runoff and soil erosion, encroachment and establishment of invasive species, and destruction of wildlife habitat, loss of biodiversity, loss of forest cover and forest edge impacts to the remaining forest, and increased use of herbicides along the ROW that will impact the surrounding ecosystem. The impacts of modifying the various vegetative ecosystems along the length of the project must be assessed, including both direct and indirect effects of project construction and operation. Among the vegetative and ecosystem impacts in need of careful consideration is the impact of forest ecosystems. These impacts must all be identified and accounted for.

Pipeline construction results in the loss of riparian (streamside) vegetation.<sup>80</sup> For each of the pipeline construction techniques, there is a resulting loss of vegetation and foliage associated with clearing the stream banks. Riparian vegetation is an important part of a healthy ecosystem and protects the land adjoining a waterway which in turn directly affects water quality, water quantity, and stream ecosystem health. The body of scientific research indicates that stream buffers, particularly those dominated by forested vegetation that are a minimum 100 feet wide, are instrumental in providing numerous ecological and socioeconomic benefits.<sup>81</sup> Simply put, riparian corridors protect and restore the functionality and integrity of streams. A reduction in streamside healthy and mature streamside vegetation reduces stream shading, increases stream temperature and reduces its suitability for incubation, rearing, foraging and escape habitat.<sup>82</sup> While horizontal directional drilling may move the construction footprint further away from the stream, it too results in vegetative losses and soil compaction that can have direct stream impacts.

The loss of vegetation also makes the stream more susceptible to erosion events, exacerbating the sedimentation impacts of construction. In crossings that result in open forest canopies, increases in channel width, reduced water depth, and reduced meanders have persisted in the years after using an open cut method of installation.<sup>83</sup>

Forest fragmentation and habitat loss is a serious consequence of pipeline construction. Damage to a forest ecosystem includes the direct and actual location of the footprint of the ROW, roadways, construction areas, and above ground aperture locations. An additional 300 feet of forest on either side of the ROW is also impacted. “[F]orest clearing

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<sup>80</sup> James Norman, et al., Utility Stream Crossing Policy, ETOWAH AQUATIC HABITAT CONSERVATION PLAN, July 13, 2008,

<sup>81</sup> See e.g. Newbold et al. 1980, Welsch 1991, Sweeney 1992, Sweeney and Newbold 2014

<sup>82</sup> Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association, and Canadian Gas Association, Pipeline Associated Water Crossings, 1-4 (2005).

<sup>83</sup> Ibid 1.

creates an associated edge effect” whereby “increased light and wind exposure creates different vegetation dynamics”.<sup>84</sup>

The Nature Conservancy has determined that “[t]he expanding pipeline network could eliminate habitat conditions needed by “interior” forest species between 360,000 and 900,000 acres as new forest edges are created by pipeline right-of-ways.”<sup>85</sup> Maps of some of the interior forested areas to be cut are included in the Transco REAE Migratory Bird Plan; DRN would recommend that the acreages of forest interior to be crossed should also be outlined in the overall summary and impact tables for the EIS. The EIS must also consider disruption of forest and forest soil ecosystem services lost as carbon sinks in the calculations and analysis since these carbon sinks will be weakened with proposed pipeline cuts through the forest and natural soils.

### **The DEP and sister agencies must fully assess impacts to wildlife.**

All animal species located on or that utilize habitats for any portion of the year and their life cycle in, around and/or impacted by the proposed ROW, construction areas and/or project apertures (such as compressors and valve stations) must be thoroughly catalogued, their population status considered, and the ramifications of the Transco REAE pipeline construction and operation analyzed. Not only must the impact on present species be assessed, but the impact on habitat potential for species that once inhabited the area, or could inhabit it in the future if properly protected and preserved, must also be considered.

Among the impacts to be considered is the impact to interior forest species, such as black-throated blue warblers, salamanders, and many woodland flowers, that require shade, humidity, and tree canopy protection that only deep forest environments can provide.<sup>86</sup>

A pipeline ROW corridor “inhibits the movement of some species, such as forest interior nesting birds, which are reluctant to cross openings where they are more exposed to predators.”<sup>87</sup> While some species may be inhibited from travelling up or across an open pipeline ROW, others will readily travel up and over, increasing the level of harm – this includes all terrain vehicles (ATVs) that continue to impact areas. DRN has observed sensitive amphibian species attempting to cross old and “remediated” pipeline ROWs that once built, cut off and endanger these migratory pathways to seasonal vernal pools. The clearing of forest for pipelines can also result in the introduction and linear and outward spread of invasive plant species (such as Japanese knotweed, Japanese stiltgrass, multiflora rose, *Phragmites*, oriental bittersweet, Japanese hops, porcelainberry, and garlic mustard) resulting in further decline and loss of native wildlife species diversity, and the creation of microclimates that degrade forest health through sunscald and increased wind-throw. For example, the pipeline corridor becomes a path for ATVs, and seeds of invasives can spread

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<sup>84</sup> Cara Lee, Brad Stratton, Rebecca Shirer, Ellen Weiss, *An Assessment of the Potential Impacts of High Volume Hydraulic Fracturing (HVHF) on Forest Resources*, The Nature Conservancy, Dec. 19, 2011.

<sup>85</sup> Nels Johnson, et al., *Natural Gas Pipelines*, The Nature Conservancy, 1 (December 2011).

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*

along the corridor in vehicular tires. These invasive plants, if tolerant to shade, can also then colonize surrounding forests and natural habitats, decreasing habitat and diversity within the adjacent forest habitat.

DEP should use the best available science to ensure protection of wildlife and avoid jeopardy to wildlife habitat.

The scope of study for impacts to species cannot be limited to the ROW. The ROW forest buffer, access roads, construction areas, staging areas, areas of aperture placement and operation, and buffers must be examined for species and habitat. The effects of increased forest edge and habitat degradation due to the impacts of construction and permanent impairment of resources on these species must be analyzed as well. The ramifications of noise, light, air and heat impacts from operation of the pipeline and associated apertures such as compressor stations must be fully considered. DEP should also not allow Transco to count cutting mature forests as “temporary impacts” since it will take decades for a mature forest to regrow, especially with impacted soils from pipeline construction where Transco proposes to have temporary work spaces (TWS) and additional temporary work spaces (ATWS). Again, as noted above, cutting across already disturbed and compacted manicured lawns in subdivisions is much less detrimental to the watershed and ecosystem services than cutting across a forest or scrub shrub habitat that is natural. Lawns have little ecosystem value and can be replanted much easier than restoring a natural forest.

**The DEP must thoroughly catalogue and consider impacts to endangered, threatened, and vulnerable plant and animal species.**

The Transco REAE project is proposed to be constructed within the habitat of several threatened and endangered plant and animal species. Many of the surveys detailed in the permit application were incomplete and scheduled to be conducted in 2021. However, most of the 2021 field survey results provided as supplemental information in September 2021 were marked “privileged and confidential information” so we are unable to comment at this time. Furthermore, Transco has previously changed the route of the pipeline without communicating this to the agencies involved in the PNDI coordination process. An email from the PGC to WHM Consulting (the consultant retained by Transco) dated September 8, 2020 states that, “...it appears that the pipeline route has changed while the study area remained the same.” The email also states that Transco never specified whether blasting would be required, when in fact it would be required. While this information was later clarified, it is unclear why Transco did not initially communicate this vital information that substantially affects the potential impacts of the project to the proper agencies.

Completed surveys have revealed the presence of several threatened and endangered plant and animal species. Two DCNR listed plants, blunt-manna grass (*Glyceria obtusa*) and white-fringed orchid (*Platanthera blephariglottis*), were found within the project area. It is important that these plants are not removed or disturbed and that the hydrology and sunlight exposure in their habitat are not altered. Acoustic surveys determined the probable presence of the federally and state endangered Indiana bat (*Myotis sodalis*) at one location, as well as the probable presence of the northern long-eared bat (*Myotis septentrionalis*) at

two survey sites associated with the Effort Loop and three survey sites associated with the Regional Energy Lateral. In addition, the autoclassifier used to conduct the acoustic surveys determined the probable presence of two Pennsylvania state endangered bat species, the little brown bat (*Myotis lucifugus*) and the tri-colored bat (*Perimyotis subflavus*). Finally, acoustic sampling also determined the probable presence of the state-threatened eastern small-footed bat (*Myotis leibii*) at eight locations. As mentioned in greater detail above, endangered mussels were also found. Please also note the comments above regarding the federally endangered bulrush species in Mineola marsh.

According to correspondence with the PFBC, the portion of the Regional Energy Lateral east of I-476 is in close proximity to known critical timber rattlesnake (*Crotalus horridus*) habitat. Potential denning and gestational habitat were identified in the study area during Phase I Habitat Assessment surveys. A Phase II presence/absence survey was scheduled in 2021 in habitat areas where potential denning habitat was identified, but as previously stated the results of this survey have not been revealed to the public. Transco proposes to re-construct rock habitat identified as gestation habitat during the project construction restoration. Timber rattlesnakes do not breed every year and surveys conducted during non-breeding years may not detect gestation habitat as a result. Furthermore, timber rattlesnakes utilize many rock outcroppings throughout the year, many of which are significantly far from their winter denning habitat. It would be beneficial for timber rattlesnakes confirmed in the project area to be radio tracked in order to document their spatial ecology and the exact areas they utilize throughout the year. Blasting and rock removal could kill any timber rattlesnake hiding within the rocks at the time. Re-constructing the rock habitat after the fact would not be beneficial to dead snakes.

Finally, bog turtle (*Glyptemys muhlenbergii*) field surveys were completed in April and July 2020, and one potential site was found. As a result, further consultation with the USFWS regarding the potential site took place. Since disturbance is located adjacent to the wetland at the one location, and there will be no disturbance or hydrologic impacts to the potential bog turtle habitat, the USFWS concluded that Phase 2 surveys did not need to be conducted at the location. However, Transco is proposing wetland mitigation at an off-site location in Northampton County. The mitigation site, known as the Perin Mitigation Site, is located southeast of Pen Argyl eight miles away from the project area. The PNDI review indicated a potential occurrence of the bog turtle at the Perin Mitigation Site. A Phase 1 survey was completed at the site in September 2020, and it was determined that potentially suitable bog turtle habitat is present. A Phase 2 presence/absence survey was proposed in the spring of 2021, but again the results are unclear as they are not publicly available.

In addition to being potentially suitable bog turtle habitat, the wetlands at the Perin Mitigation Site are hydrologically connected to Waltz Creek, a naturally reproducing trout stream. Therefore, these wetlands are considered Exceptional Value (EV) regardless of bog turtle presence. Approximately 8.7 acres of the site are Palustrine-emergent wetlands (PEM), the preferred wetland type of the bog turtle. According to the DCNR, emergent wetlands are the least abundant wetland type in Pennsylvania, being one-third as abundant as forested wetlands and only one-half as common as the scrub-shrub types. About 14 percent of Pennsylvania's wetlands are emergent wetlands.

Transco's wetland enhancement plan for the Perin Mitigation Site involves planting several species of trees, including pin oak (*Quercus palustris*) and silver maple (*Acer saccharinum*). Planting trees within an emergent wetland may accelerate succession into a scrub-shrub or forested wetland and eventually degrade its suitability as bog turtle habitat. Given that the wetlands at the site are EV and suitable bog turtle habitat, it is inappropriate to utilize it as a mitigation site. Attempting to enhance it may actually do more harm than good and leaving it in a natural state would be the most beneficial for its ecological function.

DEP must assess how the project would affect these species including impacts on habitats, vegetation, reproduction, water quality and other ecological impacts such as increased sedimentation of waterways, increased water temperatures, increased soil temperatures, multiple disturbances over time, mortality due to increased traffic, and impacts to groundwater recharge. All possible impacts to these species resulting from the Project must be studied.

Species monitoring is an extensive process and the timeframe for conducting these studies must not be cut short simply to satisfy the applicant's desired in-service date. More time may be needed to study the true impacts to these threatened, rare, and endangered species if this Project moves forward. DEP must carefully assess whether this Project can proceed without disrupting this habitat or resulting in the taking of any federal or state protected species. Furthermore, DEP should require Transco REAE to mitigate for the loss of habitat. DEP should clarify that any disturbed areas that will result in compensation, will involve resources that have substantially the same values and functions as those impacted.

The scope of study for impacts to threatened, endangered, and rare species cannot be limited to the ROW. The ROW forest buffer, access roads, construction areas, staging areas, areas of aperture placement and operation, and buffers must be examined for species and habitat. The effects of increased forest edge and habitat degradation due to the impacts of construction and permanent impairment of resources on these species must be analyzed as well. The ramifications of noise, light, air and heat impacts from operation of the pipeline and associated apertures such as compressor stations must be fully considered.

**The applicant must give due attention to impacts associated with invasive species.**

Invasive vegetation out-competes native vegetation and spreads rapidly through forest openings.<sup>88</sup> The entire Project would create edge impacts on forest communities that will be disturbed or re-disturbed by the project. The newly-created forest edge will be a direct impact of the Project and will be a prime spot for invasive species infestation on the newly-created edge. Moreover, the Project's disturbance of vegetation in the ROW, access roads, and temporary workspaces will require re-vegetation following construction, which will itself introduce new invasive species. The damaged and/or changed habitat ecosystems

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<sup>88</sup> New Jersey Audubon Society, Forest Health and Ecological Integrity Stressors and Solutions: Policy White Paper (March, 2005), available at <http://www.njaudubon.org/Portals/10/Conservation/PDF/ForestHealthWhitePaper.pdf>.

will also be an invitation for invasive wildlife species that can also have near term and long term impacts on the region, all of which must be fully considered.

The spread of invasive species, whether already established and able to find new favorable habitats due to the Project, or resulting from project construction, would have a major impact on the biodiversity of ecosystems through widespread loss of native vegetation and/or native species. The loss of biodiversity is a tragedy in its own right, but it will also affect visitor experience and may result in less utilization of the affected areas by flora enthusiasts, birders, wildlife viewers, hikers, hunters and/or boaters in favor of more biologically diverse sites elsewhere. The reestablishment of native vegetation, especially considering the effects of deer herbivory, will take many years, and until reestablishment is achieved the area will be susceptible to further invasive species infestation. DEP must consider these impacts.

Moreover, DEP should also consider the impacts of invasive species on groundwater recharge. Invasive species often have shallower root systems than native plants, which allow the soil to erode more readily and to degrade the quality of watersheds by adding to "suspended sediment loads and turbidity."<sup>89</sup>

The Transco REAE Project is likely to result in new and additional encroachment of undesirable invasive vegetation and animal species into forests, park lands, and other publicly or privately preserved areas destroying biodiversity, reducing the effectiveness of groundwater recharge, and driving away recreational visitors. This will in turn result in a loss of the economic values that accompany high recreational and aesthetic values of the Pocono region and beyond.

### **The applicant must fully consider landscape connectivity impacts.**

The ROW will create fragmentation of the forest, allowing edge species, including white-tail deer and cowbirds, to encroach deeper into the core forest. These edge effects can negatively impact plant and animal species at least 300 feet within the forest boundary.<sup>90</sup> These impacts must be examined to ensure plant and animal species, including but not limited to rare, threatened, and endangered plant species populations can be maintained in the ecosystem surrounding the ROW. Among the issues to be considered is whether any portions of the planned ROW are an essential functional portion of a species' overall habitat requirements, such as nesting or feeding, and therefore could not or would be very difficult to replace. Furthermore, species requiring large integral home ranges will be negatively impacted and coordination with NPS and the U.S. Fish and Wildlife Service is necessary to identify whether such species will be impacted by further forest fragmentation. As stated above, Transco's Migratory Bird Plan that outlines the interior forest impacts must be

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<sup>89</sup> T. Stohlgren, C. Jarnevich & S. Kumar, Forest Legacies, Climate Change, Altered Disturbance Regimes, Invasive Species and Water, *Unasylva* 229, 2007, at 44, 47-8.

<sup>90</sup> Janzen, D.H., The Eternal External Threat, in Conservation Biology, The Science of Scarcity and Diversity (Soulé, M. E., ed. 1986).

analyzed for completeness.

**The agencies must consider geology and soil impacts, which could be significant.**

The applications should include a full examination of the geological formations that will be impacted by construction activities, such as groundwater aquifers and water table depth, sinkholes, and springs. Transco must disclose how this Project will avoid all negative impacts to these features.

Blasting for stream crossings with bedrock can be proposed by pipeline operators. Instream blasting causes direct mortality to fish and aquatic organisms.<sup>91</sup> Trenching and blasting result in short term increases in sediment and turbidity levels that are higher than allowed by most regulatory agencies.<sup>92</sup> Pipeline water crossings have been shown to greatly decrease available fish cover and habitat complexity in the ROW in the longer term. The elimination of pools, riffles, and other stream characteristics caused by pipeline construction can have serious impacts on fish populations by reducing the available area for feeding, breeding, rearing and resting.<sup>93</sup> DRN has also observed and documented short term well water impacts to homeowners located near blasting and trenching operations of a pipeline ROW when turbidity and sediment in the well has made the water unpotable without treatment.

Areas of steep slopes will be traversed by the Project. Steep topography maximizes the potential for erosion, rock slides and even avalanches caused by construction of the Project. Significant permanent scarring of the geological resources could occur, with geologic impacts far more severe than would occur in level topography. Therefore, the feasibility of erosion control mechanisms in these areas must be evaluated taking into account local topography.

The digging of trenches for the Project will involve excavating tons of soil and requires that soil surveys be conducted in relation to the Project. Construction and re-establishment of vegetation along the ROW provides an opportunity for run-off and the loss of productive soil. Construction activities will change the drainage patterns along the ROW and necessitate detailed studies of impacts to water resources.

Expansion of the ROW has the potential to affect the physical properties of the soil along and adjacent to the ROW by clearing land cover, thus changing the sunlight exposure and moisture content of the soil. Reduction in soil moisture increases the risk of wind

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<sup>91</sup> Reid S, Jalbert A, Metikosh S, Bender M. 2002. "A performance measurement framework for pipeline water crossing construction". In *Environmental Concerns in Rights-of-Way Management: Seventh International Symposium*. Elsevier Science Ltd. p.697-703.

<sup>92</sup> Harper, HW and Trettel R. (2002). Theoretical modeling of suspended sediment, turbidity dynamics, and fishery impacts during pipeline construction across streams. In *Environmental Concerns in Rights-of-Way Management: Seventh International Symposium*. Elsevier Science Ltd. P. 753-763.

<sup>93</sup> Brown, CM, et al. (2002). Effects of pipeline rights-of-way on fish habitat at two Alberta stream crossings. In *Environmental Concerns in Rights-of-Way Management: Seventh International Symposium*. Elsevier Science Ltd. P. 705-715.

erosion. ROW expansion will also result in increased use of herbicides for ROW maintenance, which will chemically alter soil composition. Spillage of fuel oil and the creation of trench breakers during construction activities may also result in the chemical alteration of soil. Furthermore, natural gas pipelines increase localized soil temperatures and reduce the carbon sequestration abilities of natural soils; therefore, DEP must examine the impact to soils within the vicinity of the pipeline that experience this warming effect.

Construction activities will also necessitate the removal and disposal of material. Transco should address where the removal will be conducted and where the material will be disposed, whether digging to install the pipeline is likely to intercept the water table, and what effects the resultant pumping will have.

For Chapter 102 applications, a desktop analysis completed for the Transco REAE Effort Loop portion in Monroe County revealed that the Effort Loop Pipeline does not cross any known, mapped, or inferred faults. No mines or Karst formations were identified in the site vicinity. However, the analysis outlined that Effort Loop Pipeline lies within a zone of moderate to high landslide incidence and susceptibility. For the REAE Regional Energy Lateral portion in Luzerne County, Transco's 102 application states the same conditions for this western portion of the pipeline as well (no karst from desk top analysis but moderate to high landslide incidence and susceptibility). The Luzerne Co. Chapter 102 soil mapping also notes for the AOI for the Luzerne portion of the pipeline consists of 20.9 acres of strip mines, 22 acres of coal refuse, and 2.7 acres of mine wash, all with their own hazards.

The ramifications for this geology, legacy impacts, sinkholes and other resulting impacts, including the increased potential for a pipeline break or increased contamination, must all be considered.

**The Commission must consider the presence of exposed pipelines and associated risk of rupture.**

Because open trench pipeline installations may unnaturally alter both stream bank and streambed (i.e., channel) stability, there is an increased likelihood of scouring within backfilled pipeline trenches. Flooding rivers can scour river bottoms and expose pipelines to powerful water currents and damaging debris. Additionally, unusually heavy rains possibly associated with climate change, threaten to increase overall stream degradation and channel migration – thereby exposing shallowly buried pipelines. Exposure of the pipeline raises a greater risk of pipeline damage, breakage and pollution; with pipeline breakage resulting in the catastrophic discharge of its contents into the natural stream system. Soil erosion and channel migration reduces the soil cover over a pipeline, resulting in the formation of a scour hole which makes the pipeline vulnerable to rupture. Lateral migration of stream channels can also heighten the risk of pipeline exposure.

Scour hole development proximal to pipelines is well-documented in both stream and



seabed settings.<sup>94</sup> Federal regulations require that pipelines crossing rivers be buried at least four feet underneath most riverbeds.<sup>95</sup> An expert at HydroQuest has determined that, at a minimum, any pipeline installed using the open trench cut method needs to be installed at least 24 feet below the stream bed in order to prevent exposure from scour.<sup>96</sup>

Another significant environmental risk associated with both wet and dry trench methods of gas pipeline crossings of rivers and streams is the potential of releasing hydrocarbons or other contaminants directly into surface water and fragile downstream ecosystems, including hydro-carbon laced liquids such as benzene that are part of the gas being delivered by the pipeline. Hydrocarbon-laced condensate or natural gas liquids (NGLs) associated with natural gas (e.g., benzene) pose an environmental risk if pipe rupture occurs (e.g., to potential bog turtle habitat and travel corridors, fisheries, downstream drinking water supplies as well as underlying aquifers recharged by stream water). Clean up associated with pipeline breaks can be extremely expensive.

The potential for scour, pipeline exposure, pipeline rupture and resulting impacts must be fully considered, especially given the high number of stream crossings slated for this project.

### **Impacts including to recreation, aesthetics, art and the resulting economics**

In studying impacts to water quality, wetlands, parklands, forest land, naturally vegetated areas, and/or any of the landscapes, water resources, open space areas, conserved lands or parklands impacted by Transco REAE the ramifications for the beauty of the region and the recreational use and value of the region must also be considered. For example, consideration of the direct and indirect impacts must also be given to how diminished water quality would affect recreational and visitor uses to state and county parklands (e.g., boating, canoeing, aesthetic qualities, and degradation of fisheries), tributaries valued for their birding, boating and fishing. The market value of homes, the success of recreational ventures, the economic success of the many recreationally and aesthetically dependent businesses of the region will all be impacted by the land, water, landscape, aquatic life and wildlife impacts of the Transco REAE project. All of these issues must be considered.

When considering alternative routes the short and long-term implications of disturbing and fragmenting natural areas must be given greater weight than consideration of manicured lawn and active recreation areas.

Additionally, these Pocono region watersheds of Monroe County are highly favored and utilized by artists because of its beauty, its unparalleled ecological values and visuals,

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<sup>94</sup> Fogg, J. and Hadley, H., 2007, Hydraulic Considerations for Pipelines Crossing Stream Channels. Technical Note 423. BLM/ST/ST-07/007+2880. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. 20 pp. <http://www.blm.gov/nstc/library/techno2.htm>.

<sup>95</sup> Billings Gazette, July 21, 2011: [http://billingsgazette.com/news/state-and-regional/montana/article\\_c8d20d9e-b391-11e0-941f-001cc4c002e0.html](http://billingsgazette.com/news/state-and-regional/montana/article_c8d20d9e-b391-11e0-941f-001cc4c002e0.html)

<sup>96</sup> Expert Report from HydroQuest.

and the community it has attracted and supported. The ramifications for art, artists and art related businesses and nonprofits must also be given due consideration and valuation.

### **DEP must consider ongoing impacts caused by pipelines.**

The ongoing impacts of the pipeline ROW and operation of the pipeline for transporting natural gas must be assessed. As proposed, the ROW will be kept clear of vegetation. This ongoing absence of healthy vegetation and the methods used for maintenance, including the use of herbicides, has ongoing adverse impacts on the community and ecosystem.

The air quality impacts associated with methane leakage, the stormwater runoff and loss of groundwater recharge associated with vegetation loss and soil compaction, the impacts of forest fragmentation and invasive species are also enduring.

There are reports that farmers have reduced crop yields in the areas where their properties are crossed by pipelines – the cause and size of the food and economic impact of this affect must be thoroughly assessed. In public meetings regarding other pipeline applications one farmer said an existing pipeline crossing on his farm reduced his crop yield by 30% with measurements and data to support his assertion.

### **Conclusion**

In evaluating Transco’s applications DEP must analyze the extensive and egregious impacts the Project threatens on climate, water resources, forest ecosystems, habitats, air quality, and parks and open space. Given the dramatic growth of natural gas development in the Marcellus Shale, and the significant environmental degradation resulting from that development, DEP has an obligation to consider the cumulative impacts of this Project across the length of the project itself but also in conjunction with other known and planned projects advertised for this region and the state in its projected fossil fuel footprint expansions. Furthermore, the alternatives analysis must include alternative construction practices that can greatly avoid and minimize community, water quality, and environmental harm.<sup>97</sup>

Thank you for the opportunity to comment on the proposed Chapter 102 and 105 applications and DEP’s proposed 401 certification. We request again that public hearings on these proposed applications be held after the new year in each affected county and that with the missing information and gaps noted in these comments about the application materials that public comment be extended when Transo has fully updated its applications and all information is provided on the DEP pipeline portal. Please do not hesitate to reach out to us if you have any questions.

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<sup>97</sup> *Leslie Sauers, “Achieving Higher Quality Restoration Along Pipeline Rights-of-Way: An Overview of Pipeline Construction Impacts with Recommendations for Reducing Environmental Damage*

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**Enclosures**