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26 June 2017

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Delaware Riverkeeper Network
925 Canal Street
Bristol, PA 19007

Leah Zerbe
Schuylkill Pipeline Awareness
Schuylkill County, PA

In re: **Potential Impacts of the Atlantic Sunrise Pipeline on Exceptional Value Wetlands and Special Protection Waters in Schuylkill County, Pennsylvania**

Dear Ms. van Rossum and Ms. Zerbe:

Your organizations requested Schmid & Company to identify potential impacts relating to the construction and operation of the proposed Atlantic Sunrise pipeline on especially sensitive wetlands and other waters in Schuylkill County, Pennsylvania. This letter provides our comments, based on our review of the most recently revised (April 2017) version of the applications from the Transcontinental Gas Pipe Line Company, LLC to the Pennsylvania Department of Environmental Protection (PADEP, or "the Department") for Chapter 105 and Chapter 102 permit approvals.

Per your request, we have confined this analysis to Schuylkill County. The issues we have encountered here, however, apply to other counties crossed by this pipeline.

INTRODUCTION

The Atlantic Sunrise Project involves a major proposed expansion of the existing Transcontinental Gas Pipe Line Company, LLC (Transco) natural gas transmission system extending from Pennsylvania to Alabama. In Pennsylvania, the proposed Atlantic Sunrise expansion includes the following elements:

Central Penn Line North (CPLN): 60.4 miles of new 30-inch diameter pipeline
Central Penn Line South (CPLS): 127.3 miles of new 42-inch diameter pipeline
Chapman Loop: 2.5 miles of new 36-inch diameter pipeline
Unity Loop: 8.5 miles of new 42-inch diameter pipeline
Associated facilities including compressor stations, meter stations, regulator stations, etc.

The Schuylkill County portion of the Atlantic Sunrise Pipeline project is part of the CPLS segment. Transco describes it as consisting of approximately 18.5 miles of new (greenfield) 42-inch-diameter pipeline located in Pine Grove, Tremont, Frailey, Porter, Hegins, and Eldred Townships (see below). According to the applicant, the standard

construction ROW width for installation of the pipeline is proposed to be 100 feet. A permanent 10-foot wide corridor centered on the pipeline is proposed to be maintained in an herbaceous state through all emergent (PEM) and shrub (PSS) wetlands, and a permanent 30-foot wide corridor centered on the pipeline will be maintained in an herbaceous state through all forested (PFO) wetlands. All other temporary workspace areas reportedly will be allowed to revert to pre-construction land uses and vegetation cover following completion of the project. Only access roads which currently are permanent will be maintained; all other access roads and contractor/staging areas will be returned to pre-construction conditions.

Municipality	Mileposts	Miles
Pine Grove Township	64.3-70.5	6.3
Tremont Township	70.5-73.1	2.6
Frailey Township	73.1-M-0201 0.4	1.4
Porter Township	M-0201 0.4-75.0	0.5
Hegins Township	75.0-79.1	4.1
Eldred Township	79.1-M-0247 0.4	3.6
	SCHUYLKILL COUNTY TOTAL	**18.5**

For construction in Schuylkill County, earth disturbance is proposed to total approximately 391.97 acres. The pipeline reportedly will cross 30 streams and 27 identified wetlands in Schuylkill County. According to Transco, temporary and permanent impacts to waters and wetlands will be as listed below.

Summary of Reported Impacts Associated with the Atlantic Sunrise Project in Schuylkill County

Impact Type	Temporary Impact Total (acres)	Permanent Impact Total (acres)
Perennial Streams	0.8353	0.1014
Ephemeral and Intermittent Streams	0.3057	0.0484
Floodway	10.3204	0.9623
PEM Wetlands	1.7485	0.2474
PSS Wetlands	0.4595	0.0410
PFO Wetlands	0.2033	0.1387
PUB Wetlands	0.0935	0.0116

SUMMARY OF FINDINGS

The following issues, discussed in greater detail below, have been identified in conjunction with the proposed Atlantic Sunrise Pipeline project which crosses western Schuylkill County within the Susquehanna River Basin:

- No current "existing use" determination for affected streams has been made, possibly undercounting the extent of Special Protection waters to be impacted and also undercounting the number and extent of Exceptional Value Wetlands.

- The actual extent of Exceptional Value Wetlands to be impacted may be undercounted because not all of the Department's criteria for classifying Exceptional Value Wetlands were considered or applied to wetlands acknowledged by the applicant.

- Private water supply wells and springs have not been accurately identified, which not only is problematic for individual well owners but also possibly creates an undercount of the number and extent of Exceptional Value Wetlands.

- Additional wetlands along Wild Trout Streams should have been classified as Exceptional Value Wetlands, but were incorrectly identified by the applicant as "other" wetlands.

- Direct impacts to Exceptional Value Wetlands have not been avoided or minimized as required by Chapter 105 regulations.

- The forested nature of some Exceptional Value Wetlands along the proposed pipeline may have been mischaracterized as PEM or PSS.

- No "antidegradation" analysis of affected Exceptional Value Wetlands has been provided to or reviewed by the Department.

- The proposed mitigation for wetland impacts fails to account for most applicant-acknowledged temporary and permanent impacts to Exceptional Value Wetlands.

- There are other inconsistencies in the application regarding the nature of sensitive resources to be crossed by the proposed pipeline.

DISCUSSION OF FINDINGS AND IMPACTS

(1) No recent "existing use" determination for affected streams has been made, possibly undercounting the extent of Special Protection waters to be impacted and also undercounting the number and extent of Exceptional Value Wetlands.

The Pennsylvania Department of Environmental Protection is required by 25 Pa. Code §93.4c(a)(1)(i) to protect the existing uses of surface waters and is required by 25 Pa. Code §93.4c(a)(1)(iv) to make a final determination of existing use protection for surface waters as part of every final permit or approval action. According to the applicant, all of the streams within the Schuylkill County section of the pipeline corridor currently are designated CWF (Cold Water Fisheries), and none is designated HQ (High Quality) or EV (Exceptional Value). Some of those designated as CWF, particularly those which are first or second order streams and are in undisturbed forested settings, may actually be attaining EV or HQ *existing* use. Any stream attaining a use higher than its designated use must be protected at that higher use.

Nothing in the permit application addresses the existing uses of any of the streams to be crossed by the proposed pipeline. There is no indication that the typical method for determining a stream's existing use --- detailed macroinvertebrate studies --- or any other method has been applied in any of the pipeline corridor streams. Lists of streams and their designated and "existing" uses (such as a table in the Wetland Delineation Report entitled "Waterbodies Crossed by the Atlantic Sunrise Project Pipeline corridor in Schuylkill County: CPL South") simply report "None" for each stream in the "Existing Use" column, a bizarre conclusion because every stream has one or more existing uses.

It is the Department's responsibility to make the existing use determinations of streams, based at least in part on information provided by the applicant. For streams crossed by the Atlantic Sunrise pipeline ROW, this applicant has failed to provide the information necessary for timely decisionmaking by the Department. This failure is significant by itself, but it also may have resulted in an improper identification of the number of Exceptional Value Wetlands (see next issue below). The existing use of each affected stream must be determined from instream macroinvertebrate assessments prior to any Department decision on this permit application.

(2) The actual extent of Exceptional Value Wetlands to be impacted may be undercounted because not all PADEP criteria for classifying Exceptional Value Wetlands were considered or applied.

Exceptional Value Wetlands are important in Pennsylvania for several reasons. In accordance with 25 Pa. Code Chapter 105, any wetland is considered to be "a valuable public natural resource", and any wetland that qualifies as an "Exceptional Value Wetland" is classed among the most sensitive and "deserves special protection". Exceptional Value Wetlands in Pennsylvania are defined at §105.17(1) as wetlands that exhibit one or more of the following characteristics:

> (i) Wetlands which serve as habitat for fauna or flora listed as "threatened" or "endangered" under the Endangered Species Act of 1973, the Wild Resource Conservation Act, 30 Pa. Code. (relating to the Fish and Boat Code), or 34 Pa. Code (relating to the Game and Wildlife Code).
>
> (ii) Wetlands that are hydrologically connected to or located within 1/2-mile of wetlands identified under subparagraph (i) and that maintain the habitat of the threatened or endangered species within the wetland identified under subparagraph (i).
>
> (iii) Wetlands that are located in or along the floodplain of the reach of a wild trout stream or waters listed as exceptional value under Chapter 93 (relating to water quality standards) and the floodplain of streams tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 or designated as wild or scenic under the Pennsylvania Scenic Rivers Act.
>
> (iv) Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking water supply.

(v) Wetlands located in areas designated by the Department as "natural" or "wild" areas within State forest or park lands, wetlands located in areas designated as Federal wilderness areas under the Wilderness Act or the Federal Eastern Wilderness Act of 1975 or wetlands located in areas designated as National natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935.

The applicant has identified 27[1] wetlands to be crossed by the Atlantic Sunrise pipeline in Schuylkill County, and has classified 8 of them as being Exceptional Value Wetlands (see table below). Each of the Exceptional Value Wetlands reportedly will involve both a temporary and a permanent impact component.

EXCEPTIONAL VALUE WETLANDS TO BE IMPACTED
IN SCHUYLKILL COUNTY, AS IDENTIFIED BY TRANSCO

EV WETLAND ID #	CLASS	IMPACT TYPE	ACRE	WATERSHED (all CWF)
T35-7001	PEM	TEMP	0.0570	Mill Creek
T35-7001	PEM	PERM	0.0099	Mill Creek
T34-7002	PEM	TEMP	0.0277	Trib to Mill Creek
T34-7002	PEM	PERM	0.0093	Trib to Mill Creek
T24-8005	PEM	TEMP	0.0188	Lower Rausch Creek
T24-8005	PEM	PERM	0.0022	Lower Rausch Creek
T24-8004	PEM	TEMP	0.0273	Lower Rausch Creek
T24-8004	PEM	PERM	0.0055	Lower Rausch Creek
T96-9003/T96-9003-1/T96-89003-2	PEM	TEMP	0.6574	Good Spring Creek
T96-9003/T96-9003-1/T96-89003-2	PEM	PERM	0.0629	Good Spring Creek
T96-9004	PSS	TEMP	0.0536	Good Spring Creek
T96-9004	PSS	PERM	0.0139	Good Spring Creek
T20-8003A/T20-8003A-1	PEM	TEMP	0.1621	Pine Creek
T20-8003A/T20-8003A-1	PEM	PERM	0.0265	Pine Creek
T16-9001	PEM	TEMP	0.0191	Trib to Pine Creek
T16-9001	PEM	PERM	0.0029	Trib to Pine Creek

Many tables in the application identify specific wetlands and whether they are considered by Transco to be Exceptional Value Wetlands or "other" wetlands. Nowhere in the permit application, including in the applicant's Wetland Delineation Report as might be expected, is there mention or discussion of how the eight wetlands listed above were determined to be Exceptional Value Wetlands while other wetlands were not.

It is possible that §105.17(1) criteria "i" and/or "ii" (relating to habitat for threatened or endangered species) are applicable to some of the eight wetlands. According to the Pennsylvania Amphibian and Reptile Survey (https://www.paherpsurvey.org), sightings of bog turtles were made in the Swatara Creek watershed in Schuylkill County in 2001 and 2007. About half of the proposed pipeline in Schuylkill County passes through the

[1] This number varies from 20 to 27 wetlands in the various sections of the application. Such discrepancies in the application must be eliminated prior to permit approval.

Swatara Creek watershed. The applicant's Attachment F (Bog Turtle Statement) notes that an April 2014 letter from US Fish & Wildlife Service states that no further coordination regarding bog turtle habitat is required. Since that letter is more than 2 years old, however, the Department must request that Transco provide an updated response regarding bog turtle habitat along its route in Schuylkill County. There may be other threatened and endangered species correspondence that likewise need to be updated, but that cannot be readily determined because the applicant's Attachment G, regarding threatened and endangered species coordination, is not included on the Department's Pipeline Portal website for Atlantic Sunrise. Because that information was not made available to the public, and is not discussed even in general terms in the materials provided, it is not possible to determine whether all (or any) wetlands associated with habitat for threatened or endangered species have been accurately classified as Exceptional Value Wetlands.

§105.17(1) criterion "iii" possibly was used by the applicant as one (and maybe the only) basis to classify Exceptional Value Wetlands in the pipeline corridor. Criterion "iii" involves a wetland's association with EV Waters or wild trout streams. Although there are no EV-designated streams in the pipeline corridor, there are designated wild trout streams. According to the applicant's Environmental Assessment Form (Enclosure C, Attachment L-4) five streams[2] and their tributaries are classified by the Pennsylvania Fish and Boat Commission as Wild Trout Streams. Each of the eight applicant-acknowledged Exceptional Value Wetlands is located within the watershed of one of those wild trout streams. However, in the few places where trout waters are discussed (such as in the applicant's Wetland Delineation Report [Attachment L2], in its Environmental Assessment Form Enclosure C [Attachment L4]), there is no mention or acknowledgement of the *significance* of those trout waters to classifying Exceptional Value Wetlands, so it is unclear whether this criterion was considered.

As mentioned, there are no streams in the Schuylkill County portion of the pipeline corridor that currently have an EV *designated* use. However, the applicant has made no determination of the "existing use" of any of the streams, so it is possible that some of them actually qualify as EV. If that is the case, any wetlands within their floodplains are Exceptional Value Wetlands, and thus there may be more Exceptional Value Wetlands affected than the eight currently acknowledged by the applicant.

We believe that none of the wetlands in the pipeline corridor is likely to qualify as Exceptional Value in accordance with §105.17(1) criterion "v". There currently appears to be no State Forest or State Park lands crossed by the proposed route, nor are there any Federally-designated Wilderness Areas or National Natural Landmarks along the route.

There are likely to be wetlands within the pipeline corridor, and proposed to be impacted, that qualify as Exceptional Value in accordance with §105.17(1) criterion "iv" [Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking

[2] Good Spring Creek, Lorberry Creek, Lower Rausch Creek, Mill Creek, and Pine Creek

water supply.] The proposed pipeline route passes through rural areas where most residents obtain their drinking water from onsite wells. Indeed, more than 3 million Commonwealth residents currently rely on private wells for their drinking water supply. The next section discusses this issue further.

(3) Private water supply wells and springs have not been accurately identified, which not only is problematic for the individual well owners but also possibly creates an undercount of the number and extent of Exceptional Value Wetlands.

One of the most widely recognized and basic functions of wetlands[3] is their ability to absorb or filter pollutants such as nitrogen, phosphorus, and sediments and thereby to provide an important water quality benefit. The §105.1 definition of "wetland functions" specifically includes their "*natural water filtration processes*". Transco acknowledges this function of project-area wetlands:

> "...the wetlands and riparian vegetation abutting or adjacent to streams serve to some extent to maintain natural water filtration. Most emergent portions of wetlands within the Project area contain areas of dense vegetation that could aid in the natural water filtration process." (Attachment L-4, April 2017, page 17)

Where wetlands are located above or along public or private drinking water supplies, that water filtration function is particularly significant. Any such wetlands along the pipeline route potentially qualify as Exceptional Value Wetlands under §105.17(1) criterion "iv".

It is quite likely that at least some of the 27 Transco-identified wetlands to be crossed by this pipeline in Schuylkill County are helping to maintain the quality or quantity of a nearby drinking water supply. In discussing measures it took to avoid or minimize wetland impacts, Transco several times mentions the nearby location of residences. For example, for Wetland T21-7001 (classified as an "other" wetland) at Milepost 67.91, the applicant notes:

> "The pipeline was routed in this location to cross the margin of the wetland. Shifting the route further west to completely avoid the wetland was constrained by steep slopes and a residence west of the route." (Attachment M, Table 7, BMP-SC-TB Sheet 5 of 5, April 2017)

Despite the proximity of Wetland T21-7001 to a residence in rural Pine Grove Township, presumably one with a private water well, Transco classified it as an "other" wetland rather than making any attempt to determine whether it actually qualifies as an Exceptional Value Wetland.

The Atlantic Sunrise permit application includes no discussion about §105.17(1) criterion "iv". There is some discussion regarding the locations of public water supplies.

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[3] PADEP Fact Sheet 3930-FS-DEP1434 (2003): *Wetlands: Functions at the Junctions.* http://www.buckinghampa.org/ media/4328/value-of-wetlands.pdf

Transco reportedly (Attachment L-4) contacted the Department to identify Wellhead Protection Areas (WHPAs) and Public Water Supplies (PWSs) near proposed pipeline facilities, and reviewed WHPA and PWS information using the Department's eMapPA online map-based query. Transco determined that there are no public water supplies within the vicinity of its pipeline project within Schuylkill County, and so it anticipates no impacts.

There is no consideration or discussion at all by Transco, however, about *private* drinking water supplies along the route. Construction activities, such as open trenching and grading through streams, springs, and wetlands, have the potential to threaten water resources and water supplies. Private water supplies also may be impacted by unanticipated encounters with contaminated soil along the ROW or by inadvertent spills of fuel and other hazardous materials during project construction. Long-term ROW maintenance, including the use of herbicides, could pose threats to nearby water supplies.

In its Environmental Assessment Enclosure D ("Project Impacts", Attachment L-5) Transco does not even mention private water supplies. Its drawings do not identify the locations of any private wells or springs in the vicinity of the proposed pipeline ROW. One source of such information is the Pennsylvania Groundwater Information System (PaGWIS) database, which is available online at eMapPA. We examined that database, hosted by the Pennsylvania Department of Conservation and Natural Resources (PADCNR) and found that it identifies 35 private water wells plus 4 other wells used for agricultural purposes within 0.5 mile[4] of the proposed pipeline corridor in Schuylkill County. The PADCNR does not claim that its PaGWIS database is accurate or complete; indeed, in one recent analysis we did for a section of Westtown Township in Chester County, we found that the PaGWIS database only identified about 2% of the actual number of water wells (Schmid & Company, 2017). Transco has not identified private water wells and springs within 0.5 mile of the proposed Atlantic Sunrise pipeline ROW, nor evaluated the potential for impacts to those vulnerable resources.

Figures A1 and A2 illustrate one example of wetlands near Milepost 80.25 in Eldred Township that might have been misclassified by the applicant as "other" wetlands. The reported association of these wetlands with groundwater, and their proximity to a water supply well according to PaGWIS, likely qualifies them as Exceptional Value Wetlands.

(4) Additional wetlands along Wild Trout Streams should have been classified as Exceptional Value Wetlands, but were incorrectly identified by the applicant as "other".

As discussed above in #2, it appears that wetlands along Wild Trout Streams (part of §105.17(1) Criterion "iii" above) could have been one (perhaps the only) factor used by

[4] A deficiency letter issued in 2016 by the Department for Delaware County permit applications associated with the Mariner East 2 Pipeline Project noted the potential for short-term construction damage to water wells as extending 500 feet outward from the pipelines, and a potential for long-term damage to wells within 0.5 mile.

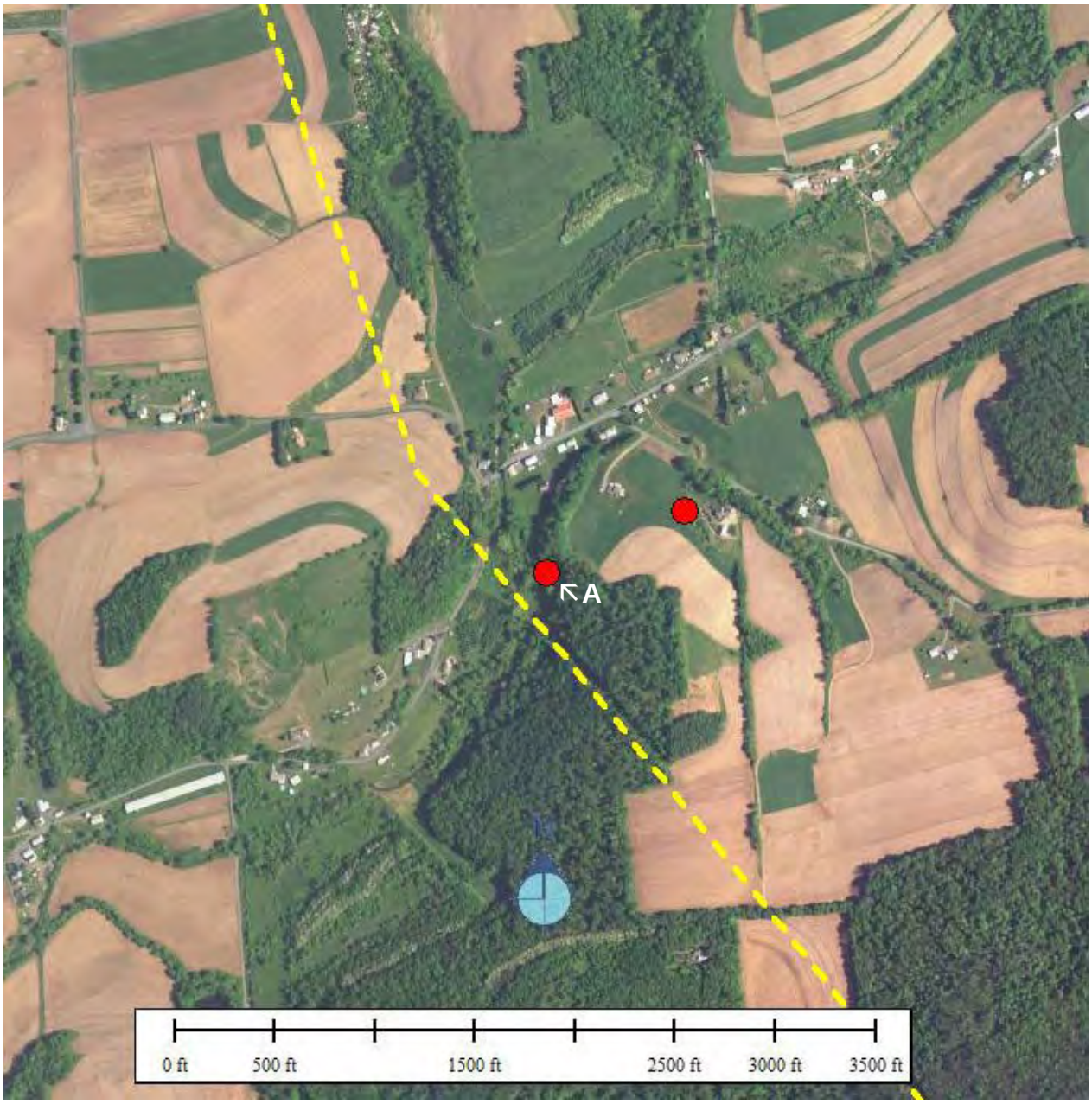

FIGURE A1. Only two water supply wells (red dots) are identified by PaGWIS along this short section of the CPLS (yellow dash) in Eldred Township, Schuylkill County. Area shown represents about 1 square mile. In this rural area all homes (there are approximately 18 shown here) presumably rely on private water wells, but only two are identified on the PaGWIS database. Red dot (A) is close to delineated wetlands along the pipeline route (see Figure A2). Transco has shown no water supply wells on its site plan drawings.

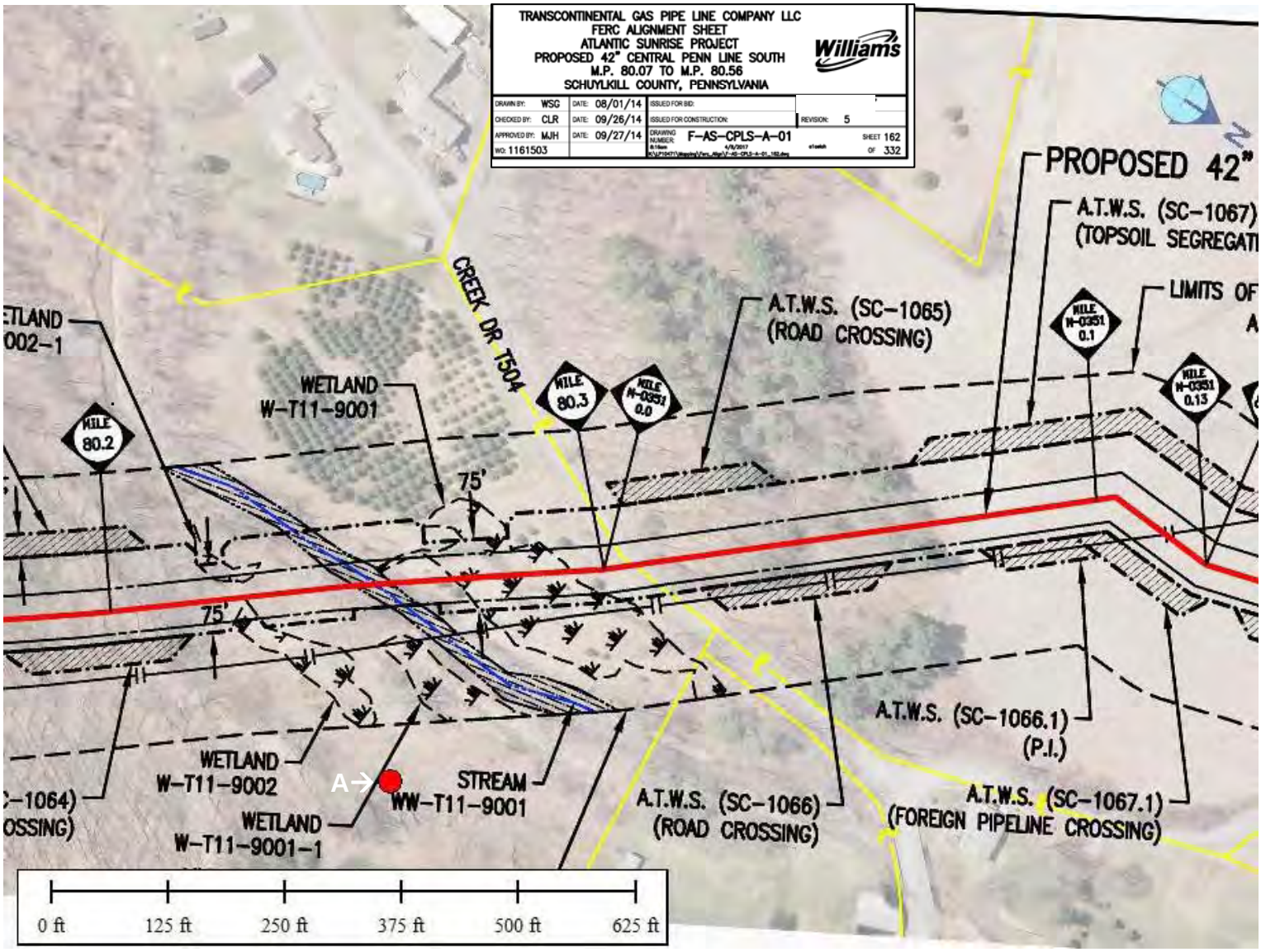

FIGURE A2. Aerial Site Plan from Attachment H-1 of the PADEP Chapter 105 permit application showing a section of the proposed Atlantic Sunrise route in Eldred Township, Schuylkill County. Red dot (lower left) superimposed on this plan indicates the location of a private water supply well according to PaGWIS (A on Figure A1). This well as plotted is very near "other" wetlands (W-T11-9002 and W-T11-9001-1) delineated by Transco within the construction corridor, but the well is not shown on any of its drawings. Description of this wetland on applicant's Field Data Log says in part: "*Drains likely to groundwater in floodplain and likely connects to WW-T11-9001 via groundwater."* The reported association with groundwater suggests that the quantity and/or quality of water in the well could be enhanced by the wetland, which would categorize it as an Exceptional Value Wetland.

the applicant to identify Exceptional Value Wetlands. If that is the case, however, that criterion apparently was not applied consistently, and as a result, many additional Exceptional Value Wetlands have not been acknowledged. One example is in Porter Township, near Milepost 74.75, where the wetlands to the south of Good Spring Creek (W-T96-9004) are mapped as Exceptional Value Wetlands, but the wetlands to the north of the Creek (W-T95-9001B-1) inexplicably are mapped as "other" wetlands (**Figure B**). There are many other wetlands along Wild Trout Streams or their tributaries in Schuylkill County that have not been classified by the applicant as Exceptional Value Wetlands.

Until all Exceptional Value Wetlands along the proposed pipeline ROW have been identified accurately, the Department cannot credibly make a final decision on this application.

(5) Direct impacts to Exceptional Value Wetlands have not been avoided or minimized.

The standard at §105.18a(a) for permitting activities in Exceptional Value Wetlands is quite strict and straightforward: the activity must "*not have an adverse impact on the wetland*". According to the Department's Water Quality Antidegradation Implementation Guidance (page 60) limited activities that result in temporary and short-term changes in the water quality of Exceptional Value Waters (which include Exceptional Value Wetlands) can be allowed, but only if all practical means of minimizing such degradation will be implemented. Transco clearly has not implemented all practical measures to minimize impacts to Exceptional Value Wetlands.

There are at least two common practices currently used by proponents of pipeline projects in Pennsylvania to avoid or minimize impacts to Exceptional Value Wetlands, neither of which has been proposed in the Atlantic Sunrise application for Schuylkill County. The first is to simply route the pipeline around Exceptional Value Wetlands in order to avoid them. While avoidance of wetland impacts is mentioned as a general consideration in the pipeline siting and alternatives analyses, avoidance of Exceptional Value Wetlands is not among the 18 factors specifically listed as "Avoidance and Minimization Measures" (Appendix L-1, "Comprehensive Environmental Evaluation for Central Penn Line", Revised April 2017, pages 1-6 to 1-7).

The only measure proposed by Transco to reduce impacts to Exceptional Value Wetlands in Schuylkill County is to reduce the width of its standard 100-foot wide construction corridor. In almost every instance where a wetland is to be crossed, Transco has reduced the construction corridor width from 100 to 75 feet, which is a standard industry best management practice that typically is implemented when working near wetlands of any type. Indeed, the width of the proposed construction corridor has been reduced to 75 feet along almost every "other" wetland, and it has been reduced no further along Exceptional Value Wetlands. Thus, the Exceptional Value Wetlands in

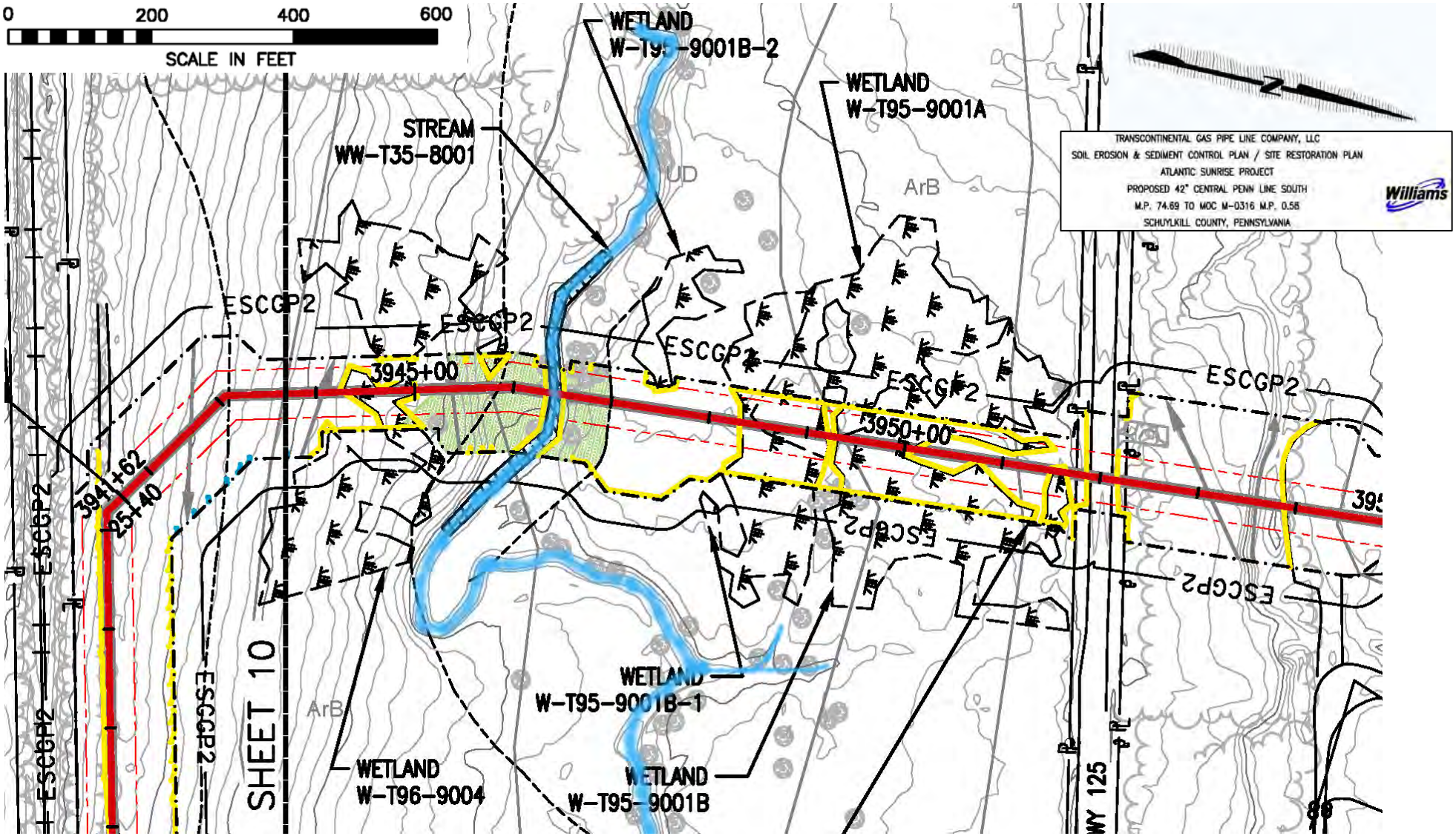

FIGURE B. Wetlands along Good Spring Creek (WW-T35-8001), a perennial Wild Trout Water (blue added to enhance visual) in Porter Township. The wetland (W-T96-9004 [PSS]) along the south (left) side of the Creek was classified by Transco as an Exceptional Value Wetland. The wetlands (W-T95-9001A [PEM], W-T95-9001B [PSS], W-T95-9001B-1 [PSS], and W-T95-9001B-2 [PSS]) along the north side of the Creek were classified by Transco as "other" wetlands.

Schuylkill County actually are not receiving any "special protection" that they are required to be afforded as EV Waters.

In several places in the application, Transco makes reference to FERC procedures or requirements. It is our opinion that in many regards the Department's environmental protection requirements are more stringent that those of FERC. Inasmuch as the Chapter 102 and 105 permits must comply with State requirements, the Department must insist that Transco follow its requirements. For example, in a table in the Alternatives Analysis (Attachment P-1, Appendix P-1), Transco several times notes that it has not specifically minimized its workspace through a PFO wetland, explaining:

> "Since the wetland width within the LOD is less than 75', the FERC procedures do not require LOD reduction."

In this instance the PFO wetland in question is not characterized as an Exceptional Value Wetland, but the applicant should follow the Department's requirement to "minimize" wetland impacts and not rely on any lesser standard associated with FERC.

By reducing the width of the proposed Limit of Disturbance (LOD), direct impacts to three Exceptional Value Wetlands (all PEM) reportedly were avoided altogether (reducing the total number currently proposed to be impacted from 11 to 8), as detailed on Table 7 in Attachment M (Drawing BMP-SC-TB, Sheet 5 of 5). While this is a positive effort, the three "avoided" Exceptional Value Wetlands now abut a more tightly-confined workspace, and remain susceptible to indirect construction-related impacts. Similarly, indirect impacts to the "undisturbed" sections of each of the 8 impacted Exceptional Value Wetlands just outside the LOD also are possible, but potential impacts to wetlands just outside the LOD have not been evaluated or reported in any way. No buffer has been proposed to protect any of the Exceptional Value Wetlands.

A second common method, the use of trenchless methods of pipeline installation (conventional bores or Horizontal Directional Drilling - HDD), can be used to avoid or greatly minimize disturbances to sensitive resources on the ground surface by going beneath them. Throughout the entire route of the proposed Atlantic Sunrise pipeline, however, only 4 conventional bores and 4 HDDs[5] are proposed to avoid or minimize impacts to waters or wetlands. In Schuylkill County, no bores and no HDDs are proposed.

In its Trenchless Crossing Analysis (November 2016), Transco establishes an extremely limited framework to constrain the possible use of bores or HDDs for its 42-inch diameter pipeline. For use of conventional bores, only streams (not wetlands) were considered by Transco, and then only where the stream is perennial **and** the bore crossing would extend 300 feet or less in length **and** the bore crossing would be 20 feet or less in depth. Applying these strict criteria, Transco proposes to use a conventional bore for only 4 stream crossings (out of 310 total crossings of perennial [221] or intermittent [89] streams) throughout the entire 188 miles of pipeline proposed in its

[5] The HDDs include crossing: Susquehanna River in Wyoming County, Susquehanna River in Columbia County, Conestoga River in Lancaster County, and Interstate 80/Fishing Creek in Columbia County. The 4 conventional bores are listed in Table K-1 of Appendix K in FERC's December 2016 FEIS.

CPLN and CPLS segments, none of those in Schuylkill County. The Transco framework for where a bore is feasible or not is inconsistent with the Department's responsibility at §105.2(4) to

> *"Protect the natural resources, environmental rights, and values secured by Pa. Const. art.1, § 27 and conserve and protect the water quality, natural regime, and carrying capacity of watercourses."*

The Transco flowchart and discussion appear to exclude *a priori* conventional bores of any length or depth under wetlands. Transco provides no valid reason why at minimum the very strict parameters it has established apply only to streams and cannot also be applied to wetlands. Transco has identified only eight Exceptional Value Wetlands to be crossed in Schuylkill County. It appears that some, if not most, of them could be avoided by conventional bores less than 300 feet in length. One example is Wetland T16-9001, which is a narrow Exceptional Value Wetland adjacent to a tributary to Pine Creek (WW-T16-9001) in Hegins Township, Schuylkill County (**Figure C**). The proposed crossing here of a stream and the wetland together is about 25 feet in length, and there are agricultural fields on both sides, so a conventional bore clearly appears to be feasible there.

For its use of HDD, the Transco framework is equally strict and does not comport with the Department's requirements. Transco states it will only consider use of HDD beneath wetlands that are "designated as HQ or EV" [note: there is no such thing as an HQ-designated wetland in Pennsylvania], **and** only if use of an open cut trench would impact more than 1.0 acre of a forested EV wetland. Since no Exceptional Value Wetland identified by Transco in Schuylkill County was characterized as PFO, and since no single impact to any wetland of any kind is more than 1.0 acre, none of the Exceptional Value Wetland crossings (in Pennsylvania, much less Schuylkill County) meet the threshold for use of HDD. This is convenient for Transco, but contrary to Chapter 105 regulations.

Even if some of the Exceptional Value Wetlands in Schuylkill County were too large, or in such a setting, that a conventional bore would not be feasible, no valid reason has been stated not to use HDD in some or all of those cases. §105.18a(a) stipulates "*no adverse impact*" on any Exceptional Value Wetland, particularly if there is any "*practicable alternative... that would have less effect on the wetland*". Limiting use of HDD to impacts to PFO Exceptional Value Wetlands that are more than 1.0 acre not only is arbitrary but it is contrary both to the Department's Chapter 105 requirements and to past experience (from the perspective of both the pipeline industry and the Department) with other large pipeline projects in Pennsylvania.

Transco states that the lower limit for an HDD crossing for a 42-inch diameter pipe is 1,700 linear feet and the upper limit is 6,000 linear feet. The upper limit should be more than adequate to cross beneath (and thus protect) each of the Exceptional Value Wetlands in Schuylkill County. The lower HDD limit, however, when combined with its 300-foot upper limit for a conventional bore, enables Transco to dismiss protection for even the most sensitive resources if they are located in this 300-foot to 1,700-foot wide range. If these

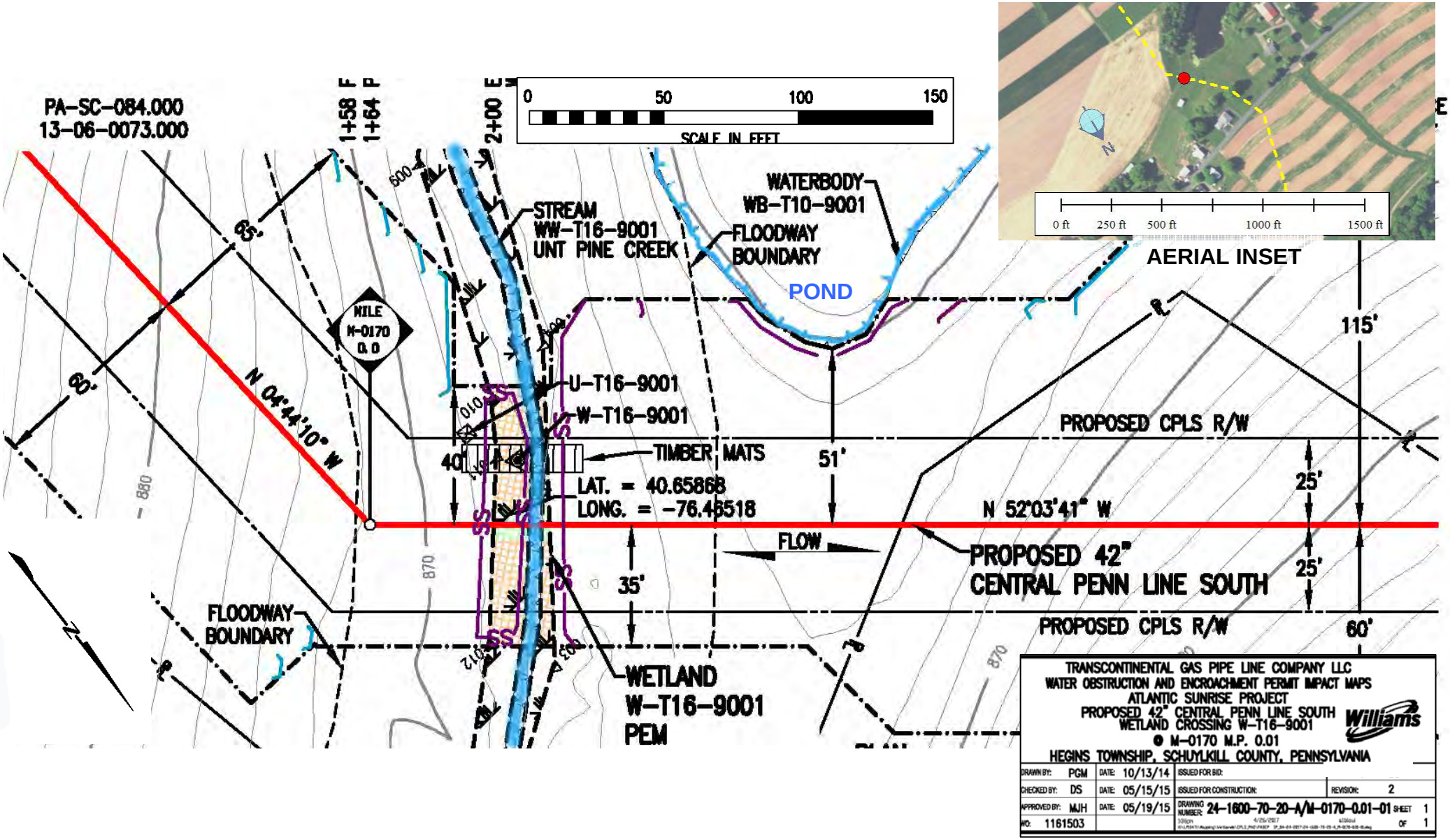

FIGURE C. Exceptional Value Wetland W-T16-9001 (shaded orange within ROW) along an unnamed tributary to Pine Creek (WW-T16-9001, with blue color added to enhance visual). Impacts here could be minimized or avoided by use of a short conventional bore. Location is a farm in Hegins Township, Schuylkill County (see aerial photo inset, where red dot indicates the stream/wetland crossing).

distances are valid technical constraints, there is no reason except cost to prevent Transco from using an HDD to avoid the most sensitive wetland resources in this area.

Most of the applicant-identified Exceptional Value Wetlands are small, and generally are found along a stream, so an HDD crossing beneath both the wetland and the (typically associated wild trout) stream together would represent a significant environmental benefit. Except to simply dismiss it for not meeting its strict and arbitrary criteria, Transco has nowhere justified why a bore or HDD cannot be used to avoid or minimize impacts to each of the eight Exceptional Value Wetlands in Schuylkill County, as it is required to do.

(6) The forested nature of some Exceptional Value Wetlands along the proposed pipeline may have been mischaracterized as PEM.

In Schuylkill County, the majority of wetlands identified by the applicant within the construction corridors of the proposed Atlantic Sunrise pipeline have been classified as herbaceous or emergent (PEM) wetlands (15 of 24, 63%). Only 6 (25%) of the identified wetlands are listed as forested PFO wetlands, and 3 are listed as scrub (PSS) wetlands (12%). This is somewhat surprising since much of the route passes through rural parts of "Penn's Woods", a State where the USFWS National Wetland Inventory three decades ago found that most vegetated palustrine wetlands (54%) were forested and only 16% were emergent (Tiner 1990). In Schuylkill County, the NWI similarly found that PFO wetlands were the predominant type, accounting for 54% of vegetated palustrine wetlands, whereas emergent wetlands accounted for only 24%.

All of the Exceptional Value Wetlands to be impacted by the proposed pipeline in Schuylkill County are characterized by Transco as PEM, except one which is listed as PSS; none is reported to be PFO. In part, this could be the result of the applicant intentionally aligning the pipeline route to avoid forested wetlands. It also is possible that the nature of the wetlands has not always been characterized correctly.

The applicant asserts less impact where a wetland to be crossed is PEM rather than PFO. In the former case there is no necessary change in wetland type, but in the latter, wetland forest will be permanently converted to and maintained as emergent or scrub wetland in the section of the ROW that will be maintained for inspection, access, and maintenance purposes. Thus, it is to the applicant's advantage for there to be less forested wetlands in the proposed ROW and more emergent wetlands, because it then would be responsible for fewer permanent impacts and would be required to provide less compensatory mitigation.

There are some instances where the Transco classification of a wetland as PEM appears to be questionable. For example, Wetland T35-7001 is listed as PEM (**Figure D**). However, the Field Data Log describes it as being "PEM in forested area", and both the E&S Plan (Attachment M, Sheet 2 of 18) and the Chapter 105 Plan (Attachment H-2, Sheet 65.35-01) which identify the edges of wooded areas, show this wetland as being located *within* the woods. Furthermore, aerial photographs, including in

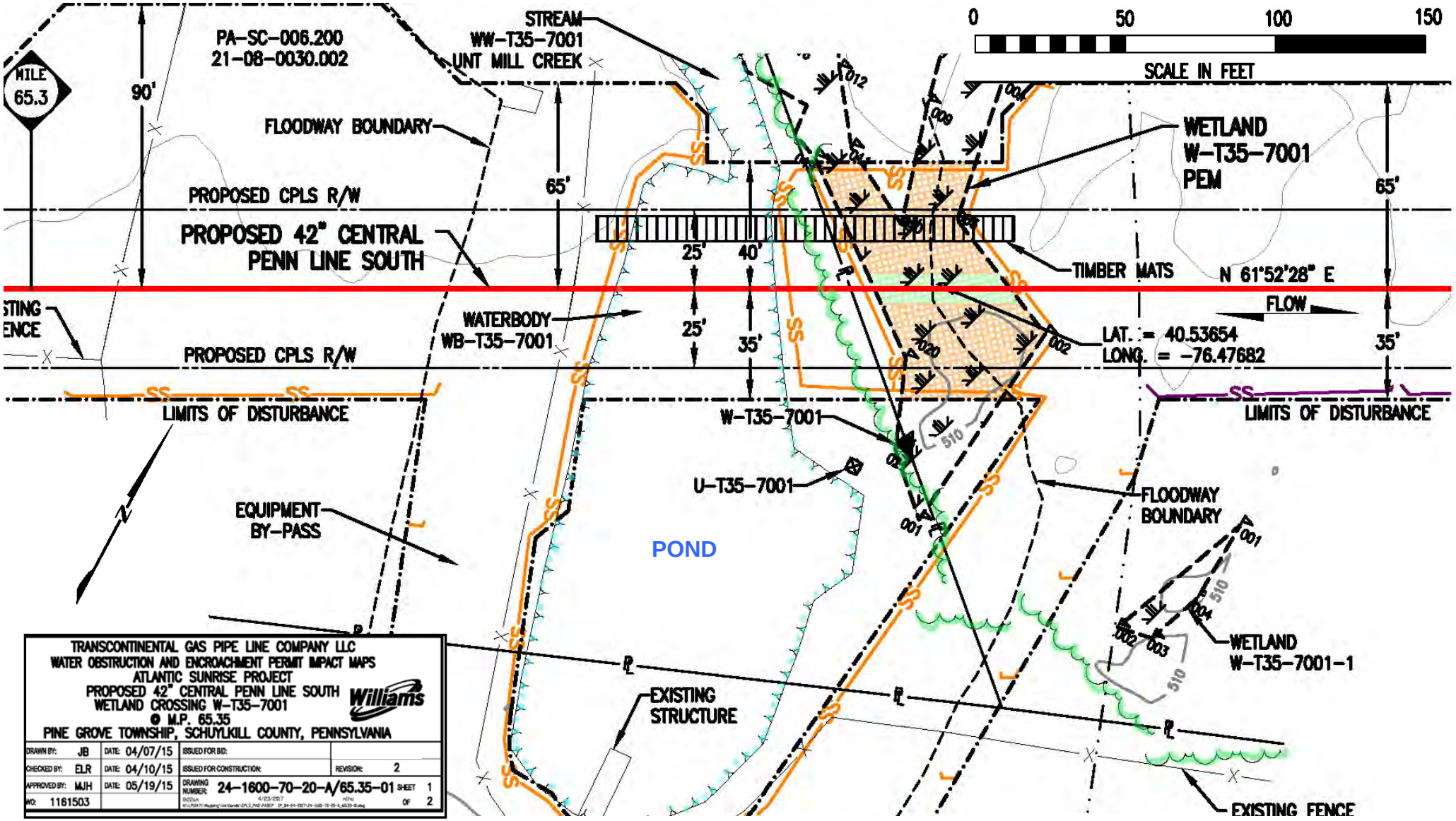

FIGURE D. Exceptional Value Wetland (W-T35-7001, shaded orange within construction ROW) which is classified by Transco as an herbaceous PEM wetland. As shown on the applicant's topographic drawing here, however, the woods edge lines (enhanced in green) suggest that the wetland actually is a forested PFO wetland. Furthermore, it is likely that the impacts at this wetland and pond crossing could be avoided/minimized by a conventional bore shorter than 300 feet. This location is in Pine Grove Township.

Attachment H-1 (Sheet 132 of 332), confirm the engineering drawing that shows this wetland area as being forested.

It is not known how many of the wetlands identified as PEM within proposed workspaces actually are PFO. The applicant's Wetland Delineation Report (April 2017, page 3-8) notes that "*On June 1, 2015, the USACE and PADEP conducted field reviews of wetlands and waterbodies delineated in the Study Area."* Presumably only a very small proportion of the nearly 200 miles of pipeline ROW was inspected, and no jurisdictional determination (JD) confirming all of the wetlands and streams delineated along the route has been issued. It is not clear whether any delineated wetlands in Schuylkill County were inspected.

(7) No "antidegradation" analysis of affected Exceptional Value Wetlands has been done.

Both Exceptional Value (EV) and High Quality (HQ) waters in Pennsylvania are entitled to Special Protection to prevent degradation when construction activities are being considered. Those waters identified as Exceptional Value Waters in Pennsylvania are *Tier 3 Outstanding National Resource Waters* in the terms of the federal Clean Water Act. Such waters are to receive the highest level of protection; *viz.,* no degradation of their quantity and quality is lawful. Protection of EV Waters is even more stringent than that applied to High Quality Waters, for which socioeconomic justification can be used as a rationale for allowing partial degradation by discharges.

Exceptional Value Wetlands, because they too are EV Waters, are to be afforded the same antidegradation "special protection" as streams that have been designated EV Waters, that is, no reduction of their existing uses is to be allowed by federal and State laws. Transco appears to believe, however, that because there are no designated Special Protection (EV or HQ) streams to be crossed by its pipeline in Schuylkill County, there is no need to perform any antidegradation analysis.

None of the proposed impacts to Exceptional Value Wetlands has been evaluated by the applicant in terms of compliance with the Pennsylvania antidegradation requirements prescribed at 25 Pa. Code Chapter 93.4a. According to the Department's Water Quality Antidegradation Implementation Guidance (Technical Guidance Document 391-0300-002; 29 November 2003; page 39) existing uses must be maintained and protected whenever an activity (including construction) is proposed which may affect a surface water. Before it issues any permit, the Department must ensure that none of the impacts to EV Waters (including Exceptional Value Wetlands) will result in any degradation of water quality.

According to the Department's Water Quality Antidegradation Implementation Guidance (page 60) limited activities that result in temporary and short-term changes in the water quality of Exceptional Value Waters can be allowed, but only if all practical means of minimizing such degradation will be implemented. One practical way to minimize

impacts to sensitive surface features such as wetlands, and especially Exceptional Value Wetlands, is to use trenchless (bore or HDD) drilling methods that go beneath the aquatic features and cause no surface disturbance to those features during pipeline construction and operation. As pointed out in #5 above, no trenchless methods are proposed to avoid or minimize impacts to any of the Exceptional Value Wetlands currently acknowledged by Transco in Schuylkill County.

(8) The proposed mitigation for wetland impacts fails to account for most applicant-acknowledged temporary and permanent impacts to Exceptional Value Wetlands.

Approximately 2.8 acres of impacts to wetlands in Schuylkill County are acknowledged by Transco; of that total, 1.2 acres are to Exceptional Value Wetlands. According to Pa. Code Chapter 105.13(e)(3), an application for a project that will affect any Exceptional Value wetland or 1 or more acres of wetlands must include, among other things, "*an assessment of the wetland function and values*".

The definition of "wetland functions" at §105.1 is as follows:

> Wetland functions --- Include, but are not limited to, the following:
> (1) Serving natural biological functions, including food chain production; general habitat; and nesting, spawning, rearing and resting sites for aquatic or land species.
> (2) Providing areas for study of the environment or as sanctuaries or refuges.
> (3) Maintaining natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, natural water filtration processes, current patterns or other environmental characteristics.
> (4) Shielding other areas from wave action, erosion or storm damage.
> (5) Serving as a storage area for storm and flood waters.
> (6) Providing a groundwater discharge area that maintains minimum baseflows.
> (7) Serving as a prime natural recharge area where surface water and groundwater are directly interconnected.
> (8) Preventing pollution.
> (9) Providing recreation.

The USACE Highway Methodology was used by this applicant to determine the existing functions and values of the wetlands within the pipeline corridor. While that may be a current methodology, and there is some overlap between the two, the USACE Highway Methodology does not track the functions and values listed in the Chapter 105 regulations. Transco claims that the Department agreed to their use of the Highway Methodology at a meeting during March 2015. Nevertheless, no attempt has been made by the applicant to rectify or correlate the two sets of existing functions and values.

The applicant's Mitigation Master Plan (Rev 2, April 2017) notes that impacts to certain PFO and PSS wetlands in Schuylkill County will be compensated at the Swatara Creek Restoration Site. In particular, the following are proposed to be compensated:

- permanent and temporary impacts to "other" PFO wetlands
- permanent impacts to EV PSS wetlands (but not temporary impacts to EV PSS wetlands)
- permanent impacts to "other" PSS wetlands (but not temporary impacts to "other" PSS wetlands)

There is no compensation proposed for impacts (permanent or temporary) to EV PFO wetlands because there are no acknowledged EV PFO wetlands in Schuylkill County (which may not be accurate as discussed above).

Mitigation is proposed for a total of 0.38 acre of permanent and temporary impacts to 9 separate PSS or PFO wetlands as follows:

0.34 ac	"other" PFO impacts	(6 wetlands)	mitigation ratio 2:1	= 0.680 ac
0.01 ac	EV PSS impacts	(1 wetland)	mitigation ratio 1.75:1	= 0.018 ac
0.03 ac	"other" PSS impacts	(2 wetlands)	mitigation ratio 1.5:1	= 0.045 ac
0.38 ac				0.74 ac (rounded)

Most of the proposed mitigation listed above (0.37 acre, or 97%) is to compensate for Schuylkill County impacts to "other" wetlands. Only 0.01 acre of proposed permanent impact to one PSS wetland involves an Exceptional Value Wetland. No mitigation is proposed for all of the remaining impacts to Exceptional Value Wetlands, including 1.1 acres (temporary and permanent) of impact proposed to the 7 Exceptional Value PEM Wetlands, and an additional 0.05 acre of temporary impact to 1 Exceptional Value PSS Wetland. It is contrary both to §105.18a(a) [permitting activities in exceptional value wetlands] and to §93.4 [antidegradation requirements] that these impacts to Exceptional Value Wetlands which have not been avoided or minimized also are not proposed to be mitigated.

(9) There are other inconsistencies or discrepancies in the application regarding the nature of sensitive resources to be crossed by the proposed pipeline.

The Environmental Assessment Form notes, in Part 1 #2, that the pipeline project is within or adjacent to "no" State Game Lands (SGLs). However, in Attachment L-4 for Environmental Assessment Form Enclosure C, the applicant states (page 20) that the proposed pipeline crosses SGL 132 and SGL 084 in Schuylkill County. Attachment L-5 for Environmental Assessment Form Enclosure D notes (page 4) that 23 acres of SGL 132 will be affected and 25.5 acres of SGL 084 will be affected. Additionally, the proposed pipeline corridor is adjacent to SGL 229 for approximately 3,000 feet in Schuylkill County. The Department cannot lawfully approve applications that are erroneous and contradictory.

According to the applicant's Environmental Assessment Form (Enclosure C, Attachment L-4, page 10) Lorberry Creek, Lower Rausch Creek, and Good Spring Creek are among the five streams classified by the Pennsylvania Fish and Boat Commission as Wild Trout Streams. Yet in the applicant's Wetland Delineation Report table of waterbodies crossed by the pipeline, these three waterbodies are incorrectly listed as "none" in the

column for "State Fishery Classification" (the two others, Mill Creek and Pine Creek, are correctly listed as "wild trout waters"). Once again, the Department cannot lawfully approve erroneous applications.

RECOMMENDATIONS

In light of the major outstanding issues identified above, we recommend that before the Department makes a final decision on the Chapter 105 and 102 permit applications, the applicant should be required to provide the Department with revised and complete water resource inventory and impact assessment information. In particular, instream macroinvertebrate data must be developed so the Department can make an "existing use" determination for each affected stream. The applicant then must be required to correct and revise as appropriate its identification of Special Protection Waters in the project area. It also must be required to complete its identification and assessment of existing Exceptional Value Wetlands by addressing each of the criteria in §105.17(1) and §105.18a(a). Then the applicant must be required to revise its evaluation and analysis of practicable alternatives necessary to avoid and minimize impacts to each identified Exceptional Value Wetland in accordance with the regulations. The applicant must then revise its mitigation plan to acknowledge and fully account for all unavoidable Exceptional Value Wetland impacts. Finally, after all information has been provided and is deemed accurate and complete, the Department needs to open a new public comment period.

We point out once again that this review focuses on just one of the nine Pennsylvania counties that will be affected by this proposed pipeline. Most of the problems and discrepancies we have identified for Schuylkill County are applicable to each of the other eight counties as well, and should be addressed by the applicant as appropriate.

We appreciate the opportunity to provide this review and comments. Please let us know if you have any questions about any of the above.

Yours truly,

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Senior Ecologist

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President