ENVIRONMENTAL REVIEW FOR CHAPTER 105 APPLICATIONS

Permittee: Sunoco Pipeline, L.P.

Project Name: Pennsylvania Pipeline Project (Mariner East 2) APP. No.: E15-862

Address: 535 Fritztown Road, Sinking Spring, PA 19608 APS No.: 879047

AUTH. No.: 1087479

Environmental Recommendation:

Approval	☒		
Denial	☐	Reviewer: Donald F. Knorr	Date: February 10, 2017
Withdrawal	☐		
Concur	☒	Super. Initials:	Date: 2/10/17
Not Concur	☐		

Recommended Special Conditions:

Permittee shall be responsible for compliance with each of the following special conditions. The Pennsylvania Department of Environmental Protection shall be referred to hereinafter as either "DEP" or the "Department."

Water Supplies:

A. At least 72 hours in advance of beginning any construction activities, the permittee shall notify all identified public and private water supplies along the project's corridor that may be affected by increased turbidity or other water quality changes caused by the permittee's construction activities.

1. If the project results in a pollution event which may impact any public or private water supplies, the permittee shall immediately notify the Department and the potentially affected public or private water supplies of the pollution event.

B. In the event the permittee's work causes adverse impacts to a public or private water supply source, the permittee shall also immediately notify the Department and implement a contingency plan, to the satisfaction of the public and private water supply owners that addresses all adverse impacts imposed on the public and private water supply as a result of the pollution event, including the restoration or replacement of the impacted water supply.

C. At least 72 hours in advance of beginning construction activities, the permittee shall notify all water users with downstream surface water intakes within one mile downstream, including but not limited to, drinking water users, industrial and commercial users that may be impacted by turbidity or water quality changes.

D. The permittee shall notify such downstream water users immediately of any pollution event or incident at its site that may endanger downstream users. The permittee shall also immediately implement its approved contingency plan to prevent further adverse impacts and remediate all adverse impacts as a result of the pollution event or incident.

E. If a public or private drinking water source not previously identified by the permittee is discovered by the permittee during construction, the permittee shall immediately notify the Department of the identified water source and shall notify that source of the permittee's construction activities.

PHMC General Conditions:

F. The permittee and its agents shall visually inspect for archaeological artifacts and shall immediately cease earth disturbance activities upon discovery of archaeological artifacts.

G. If archaeological artifacts are discovered, the permittee shall immediately notify the DEP Regional Office in the DEP region where the artifact is found and shall concurrently notify the Pennsylvania Historical and Museum Commission (PHMC) at P.O. Box 1026, Harrisburg, PA 17120-1026, telephone 717.783.8947.

H. At all times, the permittee shall protect historic, cultural and archaeological sites as identified in the latest published version of the Pennsylvania Inventory of Historical Places and the National Register of Historical Places.

PHMC Areas Subject to Phase I or Phase II Surveys:

I. The permittee shall not begin work in areas subject to Phase I or Phase II archeological investigations recommended by the PHMC until the permittee secures the necessary clearances for these areas from PHMC. (Permit specific condition as applicable. Specify location in each permit).

Submerged Lands License Agreements:

J. The permittee shall comply with all terms and conditions of the Submerged Lands License Agreement entered into between the Department and the permittee for the (identification of crossing), which is incorporated herein by reference. (This condition is permit-specific. Add when applicable and attach finalized SLLA to permit).

Temporary Road Crossings:

K. All temporary road crossings of streams and wetlands must meet all of the following conditions:

1. The permittee shall restore and stabilize all temporary crossing sites, except fords, within five (5) days after termination of its permitted use.

2. Permittee shall not utilize or construct fords on any stream or watercourse within High Quality (HQ) and Exceptional Value (EV) watersheds as specified in 25 Pa. Code Chapter 93, or in watersheds tributary to drinking water intakes or reservoirs for public water supply users, where the ford is within 2,000 feet upstream of such intake or reservoir.

3. The permittee shall adequately block and stabilize all approaches for fords used as temporary crossings within five (5) days after termination of their permitted use in order to prevent future use.

4. The permittee is prohibited from skidding across fords.

5. Where a streambed at the site of a ford does not have a rock bottom, a layer of clean rock over geo-fabric must be placed and maintained. This layer of clean rock must not obstruct the stream flow. In addition, the ford's approaches must: (1) be maintained in a firm and stable condition; and (2) enter the stream on less than a 10% grade within 50 feet of the stream with the flow; and (3) exit the stream against the flow on the same grade and distance limitation as specified for the entrance. Permittee shall ensure that all roads cross all watercourses at a right angle to the stream, unless permittee obtains specific and separate approval from the Department.

6. Permittee shall ensure that all culverts provide a waterway area sufficient to adequately discharge the normal flow of the watercourse or stream, and that culverts are of sufficient length to extend beyond the toe of the clean rock fill.

7. Permittee shall ensure that culverts are installed in such manner that overtopping of the roadway will occur within the stream channel. This can be accomplished by providing a depressed roadway embankment.

8. Permittee shall minimize excessive fill and excavation of stream banks by utilizing culverts with as large a diameter as possible. The minimum diameter size of a culvert to be used is no less than 12 inches.

9. Road and causeway embankments shall only consist of clean rock material to prevent stream channel sedimentation during placement, removal, and periods of overtopping.

10. Bridges shall be single span from top of bank to top of bank, and must be structurally stable.

11. Approach roads to temporary road crossings shall utilize original grades. However, clean rock material or gravel to a depth of six inches above original grade can be utilized for approaches, as necessary.

12. Causeways shall not extend streamward a distance greater than one-half the width of the stream channel.

13. Temporary road crossings shall be kept open and functioning at all times by maintaining the crossings free of debris and other obstructions.

14. The permittee shall promptly repair any damage resulting from increased backwater caused by a temporary road crossing. The permittee shall remove temporary road crossings in the event of high waters to prevent increased backwater.

15. If permittee cannot avoid a wetland crossing, the crossing is permissible if it is located at the narrowest practicable point of the wetland.

16. All wetlands crossing sites shall be stabilized by any appropriate means, including, but not limited to, using removable, temporary mats, pads or other similar devices to ensure minimization of impact on the wetlands ecology.

17. Temporary embankments for roads across wetlands shall be installed to maintain the hydrology of the wetland.

18. Pollution of any waterway with harmful chemicals, fuels, oils, greases, bituminous material, acid, or other harmful or polluting materials, is prohibited.

19. Access roads should not approach the stream channel directly downslope, but should traverse the slope obliquely to prevent high velocity road drainage flows from directly entering the stream channel. Road drainage shall include proper erosion and sediment control Best Management Practices.

20. The permittee shall remove all or any portion of a temporary road crossing upon written notification to the permittee from the Department in the event the project is causing an adverse impact on public health, safety or the environment or in any other manner violates the requirements of the Pennsylvania Clean Streams Law, 25 Pa. Code Chapter 105, or both.

21. The permittee shall be responsible for determining and documenting which method of crossing is appropriate for each resource. This documentation shall be provided to the Department with the pre- and post-construction photographs. The permittee shall submit this documentation to the respective DEP Regional Office within ninety (90) days after completion of work under the respective permit.

Site Field Verification, Restoration and Monitoring:

L. Prior to installation of pipeline crossings, the permittee shall take new pre-construction photographs of the natural resources at each of the crossings. The permittee shall prepare and maintain a record of pre- and post- conditions of each stream and wetland crossing. The permittee shall submit this documentation to the respective DEP Regional Office within ninety (90) days after completion of work under the respective permit.

M. All wetlands within the project area shall be accurately field-delineated prior to the start of construction activities and up to the time that earth disturbance activities are completed and the site has been stabilized. An acceptable means of field-identification of wetlands includes but not limited to, the use of an orange construction safety fence and/or flags.

N. For a period of up to 5 years following construction, the permittee shall monitor for secondary impacts to hydrology, i.e., the loss of hydrology, to all watercourses with a drainage area of less than 100 acres, including those watercourses that originate within the project ROW. Reports shall be submitted to DEP in the spring and fall for the first two (2) calendar years following construction and annually for three (3) years thereafter.

1. The monitoring reports shall contain information describing the presence or absence of hydrology at the time of inspection, a narrative comparison to hydrology present in the watercourse during pre-permitting field investigation(s), and photographs of the watercourse.
2. If the monitoring identifies a diminution or complete loss of hydrology, the permittee shall evaluate whether the activities authorized by this permit caused the loss of hydrology and submit this evaluation to the Department for review.
3. If the Department determines that the activities authorized by this permit are contributing to the loss of hydrology, the permittee shall prepare a written plan to correct the loss of hydrology to the watercourse. The permittee shall implement the approved plan within ninety (90) and submit this plan to DEP for review and approval. If DEP identifies any deficiencies with permittee's plan, then the permittee shall provide DEP a written response to address the stated deficiencies within 15 days of receiving written notice of DEP's deficiencies, unless DEP extends that timeframe in writing.
4. The permittee shall implement the DEP-approved plan within 90 days of receiving written approval from DEP, unless DEP extends that timeframe in writing.
5. In the event that loss of hydrology from activities conducted under this permit cannot be restored, the permittee shall submit a mitigation plan to DEP that sets forth the manner in which full loss of hydrology and associated water will be compensated for. If DEP identifies any deficiencies with the permittee's mitigation plan, then the permittee shall provide DEP a written response to address the stated deficiencies within 15 days of receiving written notice of DEP's deficiencies, unless DEP extends that timeframe in writing. The permittee shall implement the DEP-approved mitigation plan

within 90 days of receiving written approval from DEP, unless DEP extends that timeframe in writing.

O. Wetland excavation shall segregate the soil horizons and replace the soil horizons to match pre-construction conditions. For areas where bore pits are proposed in or adjacent to wetlands, or if a restrictive layer, including but not limited to clay or fragipans, is encountered during the trench excavation, the permittee shall have a knowledgeable wetlands scientist on the Environmental Inspection Team that shall oversee backfilling of the trench and installation of trench plugs, in order to maintain wetland hydrology.

P. Topsoil shall be segregated from subsoil in all wetland areas.

Q. All disturbed areas are to be restored, stabilized and shall be replanted with indigenous plant species. Excess fill from disturbed areas and construction activities shall be located outside of the floodway, floodplain and wetlands. The permittee is responsible for stabilizing any excess materials spoiled onsite or offsite, whether the permittee owns the site or others own the site.

R. Rock riprap shall be used in the stream bed only where a shear stress analysis has determined that scour protection is necessary to ensure stability of the resource.

S. A trench in which the pipeline will be laid shall be backfilled in a manner that does not create the formation of a permanent ridge in a streambed or wetland.

T. Restored streams shall use a minimum of six (6) inches of native stream bed material. For streams where riprap is necessary to prevent scour, the riprap shall be depressed sufficiently to allow six (6) inches of native stream bed material over the riprap.

U. All PFO and PSS wetlands within the temporary ROW shall be replanted with woody species present in the wetland prior to the permittee conducting construction activities. The plantings need not mirror pre-construction maturity.

V. Forested Riparian Areas in the temporary ROW along watercourses shall be replanted with native tree species for a minimum distance of fifty (50) feet landward from the top of both banks of warm water fisheries and trout stocked fisheries, 100 feet from cold water fisheries, and 150 feet from HQ/EV streams, in a similar density as the trees existed prior to the permittee conducting construction activities. The density of replanted trees shall be similar to the density that existed prior to the permittee conducting construction activities but shall provide no less than 60% uniform canopy cover upon maturation and shall be appropriate to the geographic location. Maintenance and inspections shall ensure survival and growth of plantings and protection from competing plants and animals including noxious weeds and invasive species over a 5-year establishment period to ensure and proper functioning of riparian forest buffers, and shall include measures to repair damage to the buffer from storm events greater than the 2-year/24-hour storm.

W. Each stream channel shall be restored and properly stabilized upon completion of the associated stream crossing. Where riprap is proposed, the riprap shall be depressed and covered with a minimum of 6-inches of streambed material. The restored streambed elevation shall not exceed the pre-existing streambed elevation.

X. The permittee shall avoid wetland impacts, to the extent practicable, and minimize any such impacts. The permittee shall immediately restore all disturbed wetland areas to original contours, and replant with indigenous wetland vegetation in accordance with their restoration plans as presented in their permit application. Streambank and wetland disturbances shall be minimized and stabilized with indigenous vegetation within ten (10) calendar days of final earthmoving to prevent erosion and provide cover, shading, and food source for aquatic life. Any temporary wetland crossings shall be made by low ground pressure machinery and wetland mats or similar devices. Excess fill shall not be deposited in any wetland, watercourse, floodway, floodplain, or other body of water.

Y. For a period of up to five years, the permittee shall monitor the stream and wetland plantings. Monitoring reports shall be submitted to the respective DEP Regional Office in the spring (May15) and fall (November 15) for the first two (2) calendar years following construction and annually (November 15) for four (4) years thereafter.

1. The monitoring reports shall contain information describing the success of the site at the time of each inspection, an inventory of the surviving plant species and percent areal coverage, photographs of the replacement site with plans showing the location and orientation of each of the photographs, and a written plan to correct any deficiencies identified during the monitoring phase.

Z. Permittee shall ensure at least an 85 percent survival rate. Additional plantings and or reports in subsequent years beyond the initial five (5) years may be required if an 85 percent survivability of planted species is not achieved.

AA. For a period of at least three years, the permittee shall monitor any exceptional value wetlands under 25 Pa. Code §§ 105.17(1)(i) and 105.17(1)(ii) that are disturbed, as authorized pursuant to this permit. Monitoring reports shall be submitted to the respective DEP regional office in the spring (May 15) and fall (November 15) for the first two (2) calendar years following construction and once (November 15) in the third year. The monitoring reports shall contain information describing the wetland restoration and function and values at the time of inspection, photographs of the wetland with plans showing the location and orientation of each photograph, and a written plan to correct any deficiencies identified during the monitoring phase.

BB. Streambank disturbance shall be minimized and stabilized with indigenous vegetation within 24 hours upon completion of final earthmoving to prevent erosion and provide cover, shading, and food source for aquatic life.

Wetland Compensatory Mitigation and Monitoring:

CC. The permittee shall create Palustrine Forested (PFO) wetlands in accordance with their "Permittee-Responsible Compensatory Wetland Mitigation Plan" to compensate for the function and value loss associated with permanently converting 0.405 acres of PFO wetlands to Palustrine Emergent (PEM) wetlands.

DD. The proposed compensatory wetland mitigation site in Cumberland County: The permittee shall only plant the 0.58 acres in the seasonally saturated areas identified in the Compensatory Wetland Mitigation Plan and shall not plant in the areas identified as saturated in the present condition in the Compensatory Wetland Mitigation Plan.

EE. For at least five (5) years after the restoration activities are completed, the permittee shall monitor the compensatory mitigation sites, wetland restoration sites, streams restoration sites and floodway restoration sites. Within sixty (60) days of completing construction, the permittee shall submit "as-built" drawings for the forested wetland creation project to the DEP. Monitoring reports shall be submitted to the respective DEP Regional Office where the mitigation project(s) is(are) located at a frequency of every six (6) months for the first two (2) years after mitigation site construction and annually for three (3) years thereafter.

1. The monitoring reports shall contain information describing the success of the site at the time of inspection, an inventory of the surviving plant species and percent aerial coverage, photographs of each site with plans showing the location and orientation of each of the photographs, and a written plan to correct any deficiencies identified during the monitoring phase.
2. If the restoration sites and compensatory forest wetland enhancement sites have not achieved design objectives within the monitoring period, the permittee will undertake remedial work to assure establishment of functional wetland habitats.

FF. Restored and enhanced habitats shall be considered successful when they meet the design objectives.

GG. Wetland compensation construction shall occur prior to or concurrently with wetland impacts requiring compensation as authorized by this permit.

HH. Compensatory wetland mitigation shall be started and completed within one (1) growing season from the commencement of the activities authorized by this permit. Within thirty (30) days of completing the planting plan, the permittee shall submit revised plans to the respective DEP Regional Office if as-built conditions are significantly different from the original approved plans.

II. The permittee shall provide copies of the recorded deed restrictions or conservation easements for the compensatory wetland mitigation sites within 60) days after permit issuance. Time-stamped copies of the instruments shall be sent to the respective DEP Regional Office.

Horizontal Directional Drilling:

JJ. The permittee shall construct and operate the Horizontal Directional Drilling (HDD) crossings at wetlands, streams and floodways in accordance with Tables 2, 3, and 4 of the Joint Permit Application (Section F, Attachments, Environmental Assessment, Attachment 11, Resource Tables) in a manner to prevent a release of drilling fluid to "Regulated waters of this Commonwealth" (RWC). The permittee shall immediately notify the Department at 866-825-0208 in the event of an Inadvertent Return occurring, and immediately activate and implement the Pollution Prevention Control Plans (PPC Plans) including the HDD Inadvertent Return Contingency Plan (IRCP), Water Supply and Karst PPC Plans to prevent any impacts to RWC and other natural resources.

KK. The permittee shall take measures to avoid mine voids and utilities.

LL. The permittee shall visually monitor the ground surface and within RWC generally along the path of the Horizontal Directional Drilling while drilling operations are occurring. This monitoring shall include walking, wading and use of a boat, as necessary to effectively observe and monitor for any

return to the surface during all RWC crossings. If loss of circulation of drilling fluid occurs or drilling fluid pressure is lost, the permittee shall immediately investigate the drilling pathway and general surrounding area for an inadvertent return. If an inadvertent return is discovered, then drilling shall immediately cease.

MM. Inadvertent returns that impact or discharge to streams, floodways or wetlands during the Horizontal Directional Drilling operations shall be remediated in compliance with the Inadvertent Return Contingency Plans. If clean-up operations differ from the submitted plans, prior approval from the respective DEP Regional Office will be necessary for any modifications to the Inadvertent Return Contingency Plan for additional mitigation.

NN. HDD additives which are certified for conformance with ANSI/NSF Standard 60 (Drinking Water Treatment Chemicals - Health Effects) are deemed acceptable to DEP, when used in the manner indicated in the certification of the additive. All conditions included as part of the additive's certification should be followed. A current listing of certified drilling fluids is maintained by NSF at http://www.nsf.org/Certified/PwsChemicals/Listings.asp?ProductFunction=Drilling+Fluid&. Use of drilling additives certified for conformance with ANSI/NSF Standard 60 does not relieve operators from the requirement to obtain the necessary permits to conduct HDD operations. Use of certified additives does not relieve the operator of liability should an inadvertent return or other pollution of the waters of the Commonwealth occur as a result of drilling operations.

Habitat Conservation Plans and Threatened and Endangered Species Protection:

OO. The permittee shall comply with all applicable provisions of the Habitat Conservation Plan submitted and approved by the U.S. Fish and Wildlife Service (USFWS), PA Game Commission (PGC), PA Fish and Boat Commission (PFBC) and PA Department of Conservation and Natural Resources (DCNR) to protect federal and state listed species. Provide a copy of the plan to the Department prior to initiation of any work under this permit.

PP. The permittee shall implement the approved Habitat Conservation Plan and in accordance with all PA Game Commission approvals for the Allegheny Woodrat (*Neotoma magister*). This includes no blasting or the use of herbicide on the project or in the vicinity of the project on PA DCNR lands as identified in the PGC clearance. Provide a copy of the plan to the Department prior to initiation of any work under this permit.

QQ. The permittee shall implement the Migratory Bird Conservation Plan approved by the USFWS. Provide a copy of the plan to the Department prior to initiation of any work under this permit.

RR. The permittee shall implement all Avoidance Measures identified by the jurisdictional resource agencies for any threatened or endangered species or species of special concern. (permit specific avoidance measures should be listed).

SS. The permittee shall implement the Avoidance Measures identified in Appendix A of the permit for all open trench wetland crossings in bog turtle (*Clemmys muhlenbergii*) counties identified by the USFWS as occupied, potentially occupied or adjacent habitats, unless otherwise specified by the USFWS.

TT. The permittee shall comply with all protocols set forth by the USFWS for protection of the Rusty Patch Bumble Bee.

UU. Prior to conducting any future maintenance activities on the pipeline or right of way which involves disturbance, the Permittee shall conduct a then current Pennsylvania Natural Diversity Inventory search, shall obtain clearance(s) for any species or resource where a potential impact is identified, provide the avoidance and mitigation plan to the Department prior to initiating such maintenance work and shall implement and adhere to all avoidance measures outlined in such clearance(s).

Seasonal Restrictions:

VV. The permittee shall not perform any in-stream work in waters listed by the PAFBC as trout stocked streams and their tributaries between March 1 and June 15 without the prior written approval from the Pennsylvania Fish & Boat Commission's Division of Environmental Services, 450 Robinson Lane, Bellefonte, PA 16823-9620; telephone 814.359.5147.

WW. The permittee shall not perform any in-stream work in waters listed by the Pennsylvania Fish and Boat Commission as Class A wild trout fishery streams and their tributaries between October 1 and April1 without the prior written approval of the Pennsylvania Fish & Boat Commission's Division of Environmental Services, 450 Robinson Lane, Bellefonte, PA 16823-9620; telephone 814.359.5147.

XX. The permittee shall not perform any in-stream work in waters listed by the Pennsylvania Fish and Boat Commission's other wild trout streams or their tributaries between October 1 and December 31 without the prior written approval of the Pennsylvania Fish and Boat Commission's Division of Environmental Services, 450 Robinson Lane, Bellefonte, PA 16823-9620; telephone 814.359.5147. (In addition to those listed in the application this special condition also applies to streams S-CJ2, S-CJ3, S-CJ4. (the specific streams listed are permit specific).

YY. Other seasonal restrictions stated in the various Habitat Conservation Plans shall be complied with unless a written variance is issued by the appropriate resource agency.

Miscellaneous:

ZZ. Maintenance mowing or herbicide spraying of wetlands is not authorized by this permit. The permittee shall place and maintain signs or other demarcation around the boundary of each wetland to clearly delineate the areas where this maintenance is not authorized. The permittee shall place the signs or other demarcations when all restoration work is completed and prior to permit termination.

AAA. This permit does not convey any real property rights or interests or authorization to trespass on privately-owned riparian land. By accepting this permit, the permittee certifies that he/she holds title, easement, right or other real interest in the riparian land. Any dispute over ownership of this land is solely a matter for private litigation.

BBB. The permittee may not commence construction activities on Pennsylvania Game Commission (PGC) lands without prior written approval from PGC.

CCC. Riprap and stone used throughout the project, including the construction of causeways and coffer dams, shall be free of fines and silts, or other non-erodible material.

DDD. All temporary water withdrawal intake structures and all appurtenant works shall be removed from the watercourse, body of water, floodway, and floodplains within sixty (60) days of initial

placement, unless otherwise extended in writing by the Department.

EEE. Trench plugs shall be placed at each of the following locations:

1. At ten (10) feet from the top of each bank of a stream
2. At fifty (50) feet from the top of each bank of a stream
3. At ten (10) feet from the edge of a wetland
4. At fifty (50) feet from the edge of a wetland

FFF. Place a minimum of one (1) trench plug at a maximum spacing of 100 feet between trench plugs within a wetland. Wetland crossings less than fifty (50) feet do not require an internal trench plug.

GGG. If during excavation, a groundwater seep is encountered, a trench plug shall be placed at ten (10) feet from each side of the seep.

HHH. Any french drains installed as part of de-watering for construction activities shall be removed or otherwise rendered inoperable prior to final site restoration.

III. Water pumped from any construction area shall be diverted into a sediment trap, basin, or a filter bag discharging into an appropriate vegetated filter area to prevent sediment from being discharged into any waters of the Commonwealth.

JJJ. Open Trench Crossings: The permittee shall construct open trench pipeline crossings in dry conditions by constructing during periods of no water flow and/or by installing stream flow bypass systems (flumed or pumped) through the affected area.

1. Each crossing shall be conducted in an uninterrupted process in the shortest period of time possible. Impacts to RWC shall be avoided, to the extent practicable, and if not practicable, then minimized in accordance with the permittee's approved plans.

2. The permittee may cross dry channels, swales and ephemeral streams without the use of stream flow bypass systems if the channel has no flow and the stream crossing and stabilization can be completed in dry conditions and within twenty-four (24) hours. Standby sandbag dams and pumps shall be located on-site and installed in the event of precipitation resulting in channel flow.

KKK. The permittee shall cross intermittent and perennial streams through the use of trenchless methods (HDD or Direct Boring [DB]) or through the use of stream flow bypass systems. Bypass systems must stay in use until streambeds and banks are adequately stabilized. Downstream flow must be maintained during the construction.

LLL. Depth of Pipeline in Stream Bed: The permittee shall locate all pipelines under stream beds such that there will be a minimum of three feet of cover between the top of the pipe or encasement and the lowest point in the stream bed, unless the pipeline is in rock, where a minimum cover of one foot shall be provided.

MMM. Aids to Navigation Plan: The permittee shall implement the approved Aids to Navigation (ATON) Plan as received under the Fish and Boat Code, 30 Pa C.S. §§5121-5124, and 58 Pa Code Chapter 113.

NNN. This permit authorizes specific impacts to *RWC* that were specifically described in the permit applications and revisions. Any proposed changes regarding the specific impacts will require a permit modification.

OOO. Any additional impacts to *RWC*, such as temporary access roads, lay-down areas, staging areas, or temporary work spaces that have not been specifically identified in the permit application are not authorized by this permit.

PPP. No deviation in the construction methodology or project design that is shown on the approved drawings is authorized under this permit unless approved through an amendment by the Department.

QQQ. This permit does not relieve the permittee of the obligation of complying with all Federal, interstate compact, State laws, regulations and standards, and local ordinances applicable to the construction, operation or maintenance of the water obstruction or encroachment.

RRR. The permittee shall follow the measures specified in the Preparedness, Prevention, and Contingency Plan during construction.

SSS. The permittee shall maintain a copy of the Preparedness, Prevention, and Contingency Plan is on-site at all times during construction, train all staff to use and implement this plan, and have this plan available to provide at the request of any Department inspector.

I. Record of Decision

CHESTER COUNTY

Has any portion of the regulated work already occurred? ____ Yes __X__ No

Wetlands Crossed: 18

Initial Proposed Wetland Acreage to be Impacted: 9.1 acres

Final Wetland Area Impacted & restored: 3.713 acres

PFO Wetland Impacted and Converted: 0.029 acres

Compensatory Mitigation PFO Wetland Area Replaced: minimum replacement 1:1 acre (statewide total)

Stream Crossings: 40 Permanent Stream Impacts: 0.243 acres; Temporary Stream Impacts: 0.028 acres

Initial Proposal Length of Channel Impacted: 4,861 linear feet (L.F.)

Final Length of Channel Impacted & Restored: 1,147 L.F.

Area of Open Water Impacted: 0.0 acres

Area of Open Water Replaced: (N/A)

Permanent Floodplain Impacts: 3.435 acres Temporary Floodplain Impacts: 1.833 acres

A.1. Review of Application:

This Record of Decision (ROD) is based on the review of the Chester County Joint Permit Application (JPA) prepared by Tetra Tech on behalf of their client Sunoco Pipeline, L.P. (SPLP) for the Pennsylvania Pipeline Project (a.k.a., Mariner East 2). The applicant seeks a water obstruction and encroachment permit to conduct activities described in the project description. The overall project includes work in seventeen (17) counties. A specific JPA was prepared for each of the counties. The applicant submitted a JPA on August 17, 2015 which was determined to be incomplete on October 26, 2015. The applicant responded with general revisions to their JPA on December 8, 2015 but the JPA remained incomplete. Subsequently a revised JPA was submitted and determined to be complete on June 14, 2016. However, after review the JPA was deemed technically deficient on September 6, 2016. SPLP requested a time extension on October 31, 2016 to submit additional information. An extension was granted allowing supporting information to be submitted on or before December 7, 2016. SPLP submitted a revised entire JPA on December 6, 2016. DEP sent subsequent email comments to SPLP (between December 6, 2016 and February 6, 2017) requesting additional clarifications. Final responses to the requests for additional clarifications were received on February 7, 2017. In addition to the applicant's supplemental information, public comments have been accepted by the DEP beginning on June 25, 2016 and a public meeting was held in West Chester on August 10, 2016. These submittals and comments are available in the administrative record.

A.2. Project Description:

Sunoco Pipeline, L.P, (SPLP), 535 Fritztown Road, Sinking Spring, PA 19608, Mariner East II Pennsylvania Pipeline Project, in West Nantmeal Township, East Nantmeal Township, Wallace Township, Upper Uwchlan Township, Uwchlan Township, West Whiteland Township, West Goshen Township, East Goshen Township, Westtown Township, and Elverson Borough, **Chester County**, ACOE Philadelphia District. The proposed project starts at West Main Street in Elverson, PA Quadrangle N: 40° 9` 20.97"; W: -75° 50` 35.65", and ends at the intersection of E. Street Road and Middletown Road in Westtown Township, PA, West Chester PA Quadrangle N: 39° 57` 1.35"; W: -75° 30` 38.10". The project consists of the installation and maintenance of approximately 24 miles long, of 20 inch and 16 inch pipeline and appurtenant structures. The proposed project impacts in Chester County include a total of 52 linear feet of temporary impacts to Marsh Creek (HQ-TSF,MF), 1 unnamed tributary to Marsh Creek (HQ-TSF,MF), a total of 1,095 linear feet of permanent impacts to Black Horse Creek (HQ-TSF,MF), 2 unnamed tributaries to Black Horse Creek (HQ-TSF,MF), East Branch Chester Creek (TSF,MF), 3 unnamed tributary to East Branch Chester Creek (TSF,MF), Marsh Creek (HQ-TSF,MF), 26 unnamed tributaries to Marsh Creek (HQ-TSF), Shamona Creek (HQ-TSF,MF), 7

unnamed tributaries to Shamona Creek (HQ-TSF,MF), South Branch French Creek (EV,MF), 5 unnamed tributaries to South Branch French Creek (EV,MF), Valley Creek (CWF,MF), 9 unnamed tributaries to Valley Creek (CWF,MF), 2 unnamed tributaries to School House Run (HQ-TSF,MF), 1 unnamed tributary to Ridley Creek (HQ-TSF,MF), and 3.435 acres of permanent floodway impacts, and 1.833 acres of temporary floodway impacts, and 0.001 acres of temporary impacts to Palustrine Emergent (PEM), Palustrine Forested (PFO) and Palustrine Scrub-Shrub (PSS) wetlands and 3.713 acres of permanent impacts to PEM, PFO, and PSS wetlands. No compensation is being proposed by the applicant for the proposed permanent project impacts in Chester County. The proposed project impacts in this permit application are associated with a proposed transmission pipeline project extending approximately 306 miles and 255 miles in Pennsylvania between Houston Borough, Washington County, PA and Marcus Hook Borough, Delaware County, PA.

A.3. Purpose and Need:

SPLP has identified a shortage of natural gas liquids (NGL) transportation options and proposes the Pennsylvania Pipeline Project in response to the identified demand. In addition, SPLP stated that the proposed project will provide exit points along its route across Pennsylvania for the provision of what are described as desperately needed propane supplies to local Pennsylvania distributors for use as heating and/or cooking fuel by consumers in Pennsylvania and neighboring states. According to SPLP the proposed pipeline project will also allow butane to be shipped to local markets as a component of gasoline to ensure suppliers can meet seasonal vapor pressure restrictions.

A.4. Surface Waters:

The Chester County portion of the proposed project includes the crossing of a total of sixty-one (61) surface waters (e.g. watercourses) of the Commonwealth. These include twenty-five (25) perennial streams, sixteen (16) intermittent streams and twenty (20) ephemeral streams. The designated water uses as listed in Chapter 93 for the streams proposed to be crossed by the pipeline within the project limits are warm water fishes (WWF), migratory fishes (MF), cold water fishes (CWF), trout-stocked fishes (TSF), high quality (HQ), and exceptional value (EV). Eleven (11) of these streams are classified as wild trout waters by the Pennsylvania Fish and Boat Commission (PFBC). Text Table 1 presents the stream (watercourse) impacts. This table is a summary of the JPA's Table 2 (see SPLP's JPA, Environmental Assessment, Attachment 11, Table 3, December 1, 2016). Chapter 105 defines floodways as part of the channel of a watercourse. Therefore, impacts to floodways are included in the text table 1.

Streams impacted by the proposed project will be restored in accordance with the Erosion and Sedimentation Control Plan (ESCP) and Stream Restoration Plans (see SPLP JPA Attachments 11 and 12) that states that the restoration of the stream to pre-existing elevation/contours, channel substrate, stream bank conditions, flow conditions/patterns and re-planting with native species will be conducted following construction. No permanent fill is proposed for any stream crossing except where rip-rap is deemed necessary to protect the restored stream channel from excessive scour or erosion. No permanent loss of stream area is anticipated to result from the proposed project. Proposed project stream impacts within Chester County include 40 stream crossings of approximately 0.243 acre of permanent and 0.028 acres of temporary impacts. In addition, 3.435 acres of 21 floodways will be permanently impacted and 1.833 acres of floodways will be temporary impacted.

Permanent impacts are defined by PADEP as those areas affected by a water obstruction or encroachment that consist of both direct and indirect impacts that result from the placement or construction of a water obstruction or encroachment (including drilled pipelines under the stream bed) and includes areas necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the floodway. Therefore, the calculated permanent stream impact areas include the entirety of the proposed ROW across stream resources. However, as stated above, because the pipeline is located below the surface all streams affected by the proposed project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream bank conditions and flow conditions/patterns. Temporary impacts are defined by PADEP as those areas affected during the construction of a water obstruction or encroachment such as temporary roadways and workspaces that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. This does not include areas that will be maintained as a result of the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the floodway.

Because the pipeline is a linear feature crossing the landscape, stream crossings are unavoidable. The proposed stream and floodway crossings will be accomplished using open trenches, conventional boring and horizontal directional drilling (HDD) methods. SPLP evaluated design alternatives including alternate routes through their Management of Change (MOC) process (see Section 5.0 of the SPLP Alternatives Analysis (AA)). The AA defines SPLP's methods to avoid and/or minimize impacts of their baseline alternative to water resources. The proposed ROW was co-located with existing ROWs where possible in consideration of the Governor's Pipeline Infrastructure Task Force's recommendation. The AA also presents major route alternatives, but no major route alternative is located in Chester County. SSPL evaluated crossing methods using their Trenchless Feasibility Assessment that considered: the

technical feasibility of current crossing technologies; costs; logistics; construction and operational constraints; existing land use and ownership; and, environmental factors to determine the crossing methods for each crossing.

SPLP was able to significantly reduce impacts to water resources by utilizing the above described methods. SPLP reports a 65% reduction of EV wetland impacts; a 71% reduction of other wetland impacts; a 69% reduction to total wetlands; a 96% reduction of POF impacts; a 59% reduction of HQ and EV stream impacts; and, a 57% reduction of impacts to total watercourse impacts.

Based on the above described assessments SPLP propose that HDD will be used at 24 stream crossing locations and 10 floodway crossings; open trench crossings will be used at 14 stream crossings and 11 floodway crossings; and, conventional bores will be used at 2 stream crossings. Open trench methods will utilize appropriate stream diversions that may include the pump bypass, flume, cofferdam or, in the case of dry channel crossings where stream flow is absent, dry open-cut crossing methods. Selection of which trench crossing method will be used will be determined in the field at the time of crossing and will be based on an assessment by the contractor and consultation with SPLP's Environmental Inspector. The method selected will be the method that is determined to be best suited to the physical stream conditions, provides the least disturbance and ensures the most expedient crossing to minimize the overall stream impact.

Restoration of the stream areas will include segregating and temporally storing native stream bed material so that it can be used to restore the stream at the pipeline crossing areas. Evaluations were conducted by the applicant to determine sheer stresses of stream flow against restored native stream bed material. If the evaluations determined that expected shear stress would result in instability where using native stream bed material for restoration, then rip rap will be used for post-construction stabilization. In those areas where rip rap is proposed and the stream bed is composed of rock, cobble, or gravel, native stone it will be used for the top six inches of rip rap. This will increase the naturalization of the stream habitat. Rip rap will be used to the minimum extent necessary to stabilize the stream bank. Areas of stream bank above the ordinary high water mark will be stabilized with erosion control blanket and revegetated. Following construction, SPLP will monitor all stream areas crossed using an open trench method and address any shortcomings to the proposed restoration efforts. Monitoring reports will be submitted to PADEP and will coincide with SPLP's Post-Construction Wetland Monitoring Plan and the permit's Special Conditions.

SPLP will utilize the HDD trenchless method to cross 24 streams and 11 floodways and conventional boring at two stream crossings. These construction methods eliminate stream impacts when compared to the conventional open cut method. There is, however, a potential for an inadvertent return (IR) of the drilling fluids. SPLP has prepared an Inadvertent Return Assessment, Preparedness, Prevention and

Contingency Plan for the overall proposed project (see JPA, Attachment 12, Tab C) that details the impact minimization measures and response measures to be implemented in the event of an inadvertent return in proximity to a stream. An evaluation of site-specific geotechnical issues including borings were used at each proposed HDD location to assist in the selection and design of each planned HDD activity. All HDD planning was reviewed by the applicant's engineers and geologists to determine the suitability of using HDD and to minimize the potential for inadvertent returns (IRs).

All restored stream areas will be monitored post-construction by a qualified specialist and in accordance with the monitoring plan submission schedule specified in PADEP's guidance document entitled "Design Criteria - Wetlands Replacement/Monitoring". A Special Condition to the permit requires monitoring of proposed post construction stream restoration areas and remedial action(s).

A.5. Wetlands:

The Chester County portion of the project includes twenty-five (25) wetland crossings. Text Table 2 lists the wetlands in Chester County. (See: the source of Text Table 2: SPLP JPA, Environmental Assessment, Attachment 11, Table 2, December 1, 2016.) The wetlands proposed for crossing include palustrine emergent (PEM), palustrine scrub-shrub (PSS), palustrine forested (PFO), and combinations of these cover types. Ten (10) of the wetlands have been classified as EV wetlands meeting one or more of the criteria of 105.17(1). Fifteen (15) wetlands are classified as "other wetlands" meeting the criteria of 105.17(2). None of the EV wetlands are considered bog turtle habitat by the U.S. Fish and Wildlife Service (USFWS).

Proposed project impacts to wetlands include 3.713 acres of permanent impacts and 0.001 acres of temporary impacts. Permanent wetland impacts are defined as those areas affected by a water obstruction or encroachment that consist of both direct and indirect impacts that result from the placement or construction of a water obstruction or encroachment and include areas necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the floodway. Therefore, the calculated permanent wetland impact areas include the entirety of the proposed ROW across wetland resources. However, as stated above, all wetlands affected by the proposed project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the project does not propose any permanent fill in wetlands and there is no anticipated loss of wetland area associated with the project. SPLP will not maintain the ROW through wetland areas through mowing or herbicides. All wetland areas impacted by the proposed project will be restored to original function and values, and replanted to pre-construction conditions with the exception of 0.029 acre of forested wetlands, which will be converted to palustrine emergent wetlands. No compensation of for the PFO conversion is proposed by

the applicant within Chester County. The applicant will enhance wetlands in Cambria and Cumberland Counties at greater than a 1:1 replacement ratio. The PFO conversion in Chester County amounts only to 0.029 acres, therefore, combining the Chester County acreage with the SCRO's and SWRO's conversion acreage allows for the enhancement of larger areas that will provide greater degree of functions.

Temporary wetland impacts are those areas affected during the construction of a water obstruction or encroachment that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. The temporary wetland impacts calculated for the proposed project therefore do not include those areas that will be maintained as a result of the operation and maintenance of the pipeline.

Of the twenty-five (25) wetlands crossed, 16 wetlands will be crossed using conventional open cuts, seven wetlands will be crossed using HDD and two crossed with conventional bore. Two of the 25 wetlands will also be crossed with temporary matting. Wetland impacts have been calculated based on the entire limit of disturbance during construction.

Wetland crossings will be restored in accordance with the ESC Plan and Wetland Restoration Plans (see SPLP JPA Attachments 11 and 12). These documents state that hydric soils will be segregated and re-used to restore hydric soil conditions and to provide a seed bank for wetland species. Timber mats will be used whenever a wetland needs to be temporally crossed. Emergent wetlands impacted by the proposed project will be revegetated following construction through the use of the addition of Ernst Conservation Seed Mix No. ERNMX-122 Facultative Wet (FACW) Meadow Mix, which will be applied during the recommended planting season. PFO and PSS wetlands impacted by the proposed project will be replanted with native trees and shrubs respectively.

During restoration, temporary workspaces in PFO wetlands will be planted with native tree species and the permanent ROW will be planted no closer than 10 feet from the proposed or existing pipelines with native trees. The remainder of the PFO wetland area within the permanent ROW will be restored to the wetland condition. The need to refrain from planting trees in close proximity to the proposed or existing pipelines will result in permanent conversion of 0.029 acres of PFO wetlands to PEM wetlands. All temporarily impacted PSS wetlands will be replanted in both the temporary workspaces and the permanent ROW with native wetland shrubs. Native vegetation similar to what was identified in the various PFO and PSS wetland areas prior to construction will be used. Where possible native wetland vegetation, especially shrubs will be cut at the ground level and roots will remain in place. These root masses will serve to re-vegetate the wetland. PSS impacted wetland areas where the root system was not removed may not require replanting. The overall (state-wide) project will ultimately result in a total of 0.405 acres (this includes 0.029 acres of impact from Chester County PFOs) of unavoidable

permanent conversion of forested wetland (PFO) to emergent wetlands (PEM) which will require off-site compensatory wetland mitigation. SPLP will mitigate for this cumulative conversion impact by enhancing portions of offsite emergent wetlands with forest plantings.

All restored wetland areas will be monitored post-construction by a qualified wetland specialist and in accordance with the terms specified in PADEP's guidance document entitled "Design Criteria - Wetlands Replacement/Monitoring". A Special Condition to the permit will ensure the implementation of the proposed post construction wetland restoration area monitoring plan.

A.6. Floodplains:

The Chester County portion of the project includes eleven (11) floodplain only crossings. Text table 3 lists the floodway crossings in Chester County (see table source: SPLP JPA, Environmental Assessment, Attachment 11, Table 4, December 1, 2016). There will be no above-ground features constructed in the floodplains. Following pipeline construction floodplains will be restores to their pre-construction condition.

A.7. Comprehensive Environmental Assessment:

On December 5, 2016, SPLP submitted a Comprehensive Environmental Assessment (CPA) for Ch. 105 Water Obstruction and Encroachment Permit Activities. The purpose of the CPA is to ensure that the regulatory requirements related to the Environmental Assessment in Ch. 105 are met by permit applicants proposing project impacts to waters of the Commonwealth. Specifically, the following items were to be addressed:

On December 5, 2016, SPLP submitted a Comprehensive Environmental Assessment (CPA) for Ch. 105 Water Obstruction and Encroachment Permit Activities. The purpose of the CPA is to ensure that the regulatory requirements related to the Environmental Assessment in Ch. 105 are met by permit applicants proposing project impacts to waters of the Commonwealth. Specifically, the following items were addressed:

1. Measures taken to avoid and minimize the overall project's impact on waters of the Commonwealth, to the maximum extent practicable. The submittal addresses this item and references application materials that apply to each requirement pursuant to 105.18a and associated referenced regulations including 105.13(e)(1)(vii-x), (2),(3), (g) and (j); and 105.15.
2. Specific measures taken to mitigate for impacts that could not be avoided or minimized. The submittal addresses this item and references application materials that apply to each requirement pursuant to 105.18a and associated referenced regulations including 105.14.
3. Overall consistency with Antidegradation. The submittal addresses consistency with State Antidegradation requirements contained in Chapters 93, 95, 102 and 105.

4. Address alternatives analysis, impacts analysis and mitigation measures in each County-specific application. This item is addressed within the corresponding section of the Record of Decision for each county specific Ch. 105 Joint Permit Application.
5. Assess the cumulative impact of the project and other existing and potential projects on each wetland resource. The applicant must utilize due diligence when identifying these impacts. This item is addressed within the corresponding section of the Record of Decision for each county specific Ch. 105 Joint Permit Application.

☒ Additional sheets attached.

B. Potential Project Impacts	YES	NO
1. Potential Threats to Life or Property	ENG	
2. Potential Threats to Safe Navigation	ENG	
3. Riparian Rights Above, Below or Adjacent to Project	ENG	
4. Regimen and Ecology of		
a. Watercourse	☒	☐
b. Body of Water (includes wetlands)	☒	☐
5. National/State Natural Areas, Wildlife Sanctuary/Refuge	☐	☒
6. National/State/Local Park or Recreation Area	☒	☐
7. National/State/Local Cultural, Archaeological, or Historical Site	☒	☐
8. Public Water Supply	☒	☐
9. Non-compliance with Applicable laws	☐	☒
10. Non-water Dependent Project	☐	☒
11. Future Development Potential	ENG	
12. State Water Plan Program Area	ENG	
13. Coastal Zone Management Program Area	☐	☒
14. Scenic River Corridor	☐	☒
15. Chapter 93 Classification – see Tables 2 and 3	☒	☐
a. Exceptional Value Watershed	☒	☐
b. High Quality Watershed	☒	☐
c. Antidegradation Consistency	☒	☐
16. Secondary Impacts	☒	☐
17. Cumulative Impacts (temporary and permanent impacts)	☒	☐
18. Wetlands		
a. Vegetation (NWI Designation – see table 2	☒	☐
b. Soils (NRCS Designation – various see Aquatic Resources Report)	☒	☐

	YES	NO
c. Hydrology (various see Aquatic Resources Report)	☒	☐
19. Exceptional Value Wetlands	☒	☐
20. Stocked Trout Stream	☒	☐
21 Wild Trout Stream	☒	☐
22. Threatened or Endangered Species	☒	☐
23. Other Species of Special Concern (Migratory Birds)	☒	☐

C. Record of Decision for Project Impacts (Any adverse findings must be documented in the Record of Decision.)

1. Exceptional Value Wetlands - (check the criteria that makes the wetland EV):

☐ natural or wild areas ☐ wild or scenic river ☒ wild trout stream

☒ public or private water supply ☒ EV waters ☒ threatened or endangered species habitat

☒ threatened or endangered species (results of PNDI search)

The proposed project will cross 25 wetlands in Chester County. Of these, 10 wetlands were determined to be Exceptional Value (EV). Seven of these wetlands were determined to be EV based on proximity to EV streams and three wetlands were EV due to the proximity to a Wild Trout streams (105.17.1.iii). EV wetland C37 will be crossed by HD. The remaining EV wetlands, identified as A46, B12, B13, B14, C33, C34, C35, C38 and C40 will be crossed by open trenching methods. A total of 0.613 acres of permanent and 0.001 acres of temporary impacts to the EV wetlands. All EV wetlands will be restored at the original extents and locations, therefore there will be no permanent loss of EV wetland area (i.e. no fill).

a. Describe the primary function(s) or value(s) of the wetland:

Wetland functions and values were estimated by SPLP using the U.S. Army Corps of Engineer's Highway Methodology. Wetland functions and values for the Chester County wetlands were usually low with Groundwater Recharge/Discharge, Flood flow Alteration, Sediment / Toxicant Retention, and Nutrient Removal, and wildlife habitat most frequently functioning. On average each EV wetland was judged to be providing only four of the 13 functions and values used in the highway methodology. Based on the writer's observations the low levels of functions and values are caused by numerous human induced impacts,

including ATV use, ROW maintenance, proximity of residential, commercial developments and agricultural uses.

b. Will the project have an adverse impact on the wetlands functions or values? ☐ ☒

Explain: Nine of the 10 EV wetlands will be crossed by open trenching. The remaining wetland C37 will be crossed by HDD. Impacts to these wetlands will be temporary during construction. Following construction the wetlands will be restored in accordance with the ESC Plan, Wetland Restoration Plans (see SPLP JPA Attachments 11 and 12) and Permit special Conditions. The applicant will also implement ABACT, ESCP, ECS, IRCP and Spill Prevention and Control (SPCC) plans, along with Restoration Measures and Compensatory Mitigation, to prevent and minimize impacts, and mitigate for unavoidable impacts. The HDD crossing method was determined by the applicant's feasibility assessment to be infeasible for crossing the other nine EV wetlands.

The nine impacted EV wetlands are located on the existing ROW and will be impacted unless an alternate routing is developed. SPLP considered and evaluated a route alternative for each of the nine crossings of EV wetlands. SPLP concluded that none of the alternative routes were practicable based on costs and logistics. SPLP believes that co-locating the pipeline in an existing ROW and minimizing the work area from its standard 75 ft to 50 ft at each crossing will minimize overall impacts to resources. SPLP further believes that the alternative routes may impact other resources adjacent to the ROW. However, SPLP did not conduct screening for protected species or conduct wetland delineations beyond their 200-ft survey corridor therefore their assessments are not definitive.

DEP has required and SPLP has consented to undertake numerous measures to avoid adverse impacts to stream and wetlands resources, to the extent practicable, to minimize impacts on streams and wetlands, where avoidance is not practicable, and mitigate any such impacts. These measures include: limiting the areal extent of disturbed areas during construction from 75 ft to 50 ft.; requiring SPLP to restore wetlands to their original contours and drainage patterns, protect spring seeps, utilize trench plugs, avoid soil compaction, and replace excavated hydric soils to their original location and stratum, including mucky soils; restoring wetland vegetation; restoring stream channels; and requiring function and value replacement by the enhancement of PFO wetland resources to compensate for the cumulative functional wetlands losses.

DEP is also requiring, as an additional anti-degradation measure, that SPLP comply with its Habitat Conservation Plans (HCP). Implementation of the HCPs will protect the habitat and potential habitat of state and federal threatened and endangered (T&E) species that may inhabit the wetlands. Because several of the EV wetlands in the project area may provide potential habitat for bog turtles the implementation of the bog turtle HCP adds an extra layer of protection. It is noted that none of the Chester County EV wetlands have an EV designation due to the presence of bog turtles but two wetlands are located near potential bog turtle habitats.

If Yes, has applicant affirmatively demonstrated that project is necessary to abate a substantial threat to the public health and safety?	☐	☐
Has applicant demonstrated that requirements of Section 105.18a(b)(2)-(7) are met?	☒	☐

c. Is project water-dependent? (A project is water dependent when the project requires access or proximity to or siting within the wetland or waters to fulfill the basic purpose of the project.) ☒ ☐

Explain: The project is water dependent because it is a linear crossing and crossing of water resources in the landscape is inevitable.

d. Is project the least environmentally damaging alternative? ☒ ☐

List alternatives considered and provide rationale that the least damaging alternative has been selected.

The applicant analyzed several different route locations and designs. See Alternatives Analysis, Section 3.0 – 3.4.

	YES	NO
e. Will project violate a State water quality standard?	☐	☒

Explain: SPLP's implementation of ABACT, and its ESCP, ECS, IRCP, and SPCC Plans, will protect water quality, when coupled with implementation of Restoration Measures and Compensatory Mitigation. In addition, 25 Pa. Code § 105.18a was incorporated into the DEP's federally-approved water quality standards program on February 12, 1994. *See* 24 Pa.B. 922. The DEP assures compliance with water quality standards by requiring applicants proposing impacts in wetlands to take measures to maintain and protect these wetland resources. Moreover, 25 Pa. Code § 93.4c(a)(2), also incorporated into the Commonwealth's federally-approved water quality standards program, provides that the DEP will assure protection of

Federal and Pennsylvania endangered and threatened species and their critical habitat in or on a surface water, including wetlands. The general and special conditions of this Chapter 105 Permit for the protection of threatened and endangered species and habitat, along with those in the Water Quality Certification, and the applicant's implementation of the HCP, will assure protection of endangered and threatened species and their critical habitat and meet water quality standards.

f. Will project contribute to the pollution of groundwater or surface water or diminution of resources sufficient to interfere with their uses? ☐ ☒

Explain: SPLP's implementation of ABACT and its ESCP, ECS, IRCP, and SPCC Plans, will protect groundwater and surface waters, including EV wetlands, when coupled with implementation of Restoration Measures and Compensatory Mitigation.

g. Will the cumulative effect of this project and other projects result in impairment to exceptional value wetland resources? ☐ ☒

Explain: The DEP is not aware of any additional projects within the ROW that would result in a cumulative impact to EV wetlands.

h. Explain how wetlands have been replaced in accordance with 105.20a and list which compensatory replacement method was used.

Explain and List: Construction of the pipeline will result in 0.029 acres of permanent impacts to palustrine forested (PFO) wetlands due to the conversion to palustrine emergent marsh (PEM). This is considered a major reduction in functional values of these wetlands. DEP has required a areal replacement by forested wetland creation as Compensatory Mitigation to compensate for this functional loss. Additionally, all impacted wetlands shall be restored to pre-construction conditions; SPLP must implement Restoration Measures.

2. Other Wetlands

a. Describe the primary function(s) or value(s) of the wetland: Groundwater Recharge/Discharge, Flood flow Alteration, Sediment/Toxicant Retention, Production Export, Nutrient Removal, and Wildlife Habitat.

Explain: The 15 "other" wetlands as defined by 105.17(2) have 3.109 acres of permanent ROW and no temporary impacts for construction ROW located in Chester County. These impacts include 0.029 acres of cover type conversion of forested wetlands (wetland H15). As indicated in Attachment B of the application, these other wetlands affected by the Project lack many of the 13 functions and values and have been determined to be low value. Impacts to functions and values

will be temporary, especially given restoration will occur immediately following construction and revegetation of wetlands will occur within the first growing season.

b. Will the project have an adverse impact on the wetland's functions or values? ☐ ☒

Explain: Due to restoration, all impacts to wetland functions and values are anticipated to be temporary in nature, and therefore do not represent an adverse impact. All wetland areas temporarily impacted by the proposed project will be restored to original conditions immediately following construction and the revegetation of temporarily impacted wetlands (with the exception of forested wetlands) will occur within the first growing season. No permanent adverse impacts to any wetland's functions or values are expected.

c. Will the project have a significant adverse impact on the wetland's functions or values? ☐ ☒

Explain: Although the minor conversion of forested wetland areas to emergent wetlands within the permanent ROW can be construed as a significant adverse impact on wetland functions or values, SPLP proposes to offset the forested wetland conversion function or value impacts by enhancing existing emergent wetlands offsite to create forested wetlands for the cumulative project forested wetland conversion impacts. Also, none of the functions and values identified for forested wetland areas that will be converted to emergent wetland areas following construction are expected to be lost completely and should return to some extent following the cover type conversion.

If Yes, has applicant affirmatively demonstrated that project is necessary to abate a substantial threat to the public health and safety? ☐ ☐

d. Have adverse impacts been avoided or reduced to maximum extent possible? ☒ ☐

Explain: As stated in SPLP's Impact Avoidance, Minimization, and Mitigation Procedures (EA Enclosure E-Part 4) included in the application, efforts have been made to avoid or reduce adverse impacts to wetlands. In some cases, impacts to wetlands have been eliminated through the proposed use of trenchless pipeline installation methods. Timber mats will be used for travel lanes and equipment work through wetlands. Where possible, wetland vegetation will be cut at ground level, leaving the existing root system in place. Wetland topsoil will be segregated to be used for restoration following construction. Trench plugs will be utilized at all open trench wetland crossing locations. Disturbed wetlands will be restored to the original contours, surface

flows and vegetative cover type where possible, contours and surface flow. Wetland restoration details can be found in Attachment 12- E & S Plan.

	YES	NO
e. Is project the least environmentally damaging alternative?	☒	☐

List alternatives considered and provide rationale that the least damaging alternative has been selected.

SPLP proposed several alternatives for its pipeline route. SPLP has undertaken measures to avoid wetland impacts, to the extent practicable, and to minimize impacts where avoidance is not feasible. Further, SPLP is required to restore impacted wetlands, as well as to provide compensatory mitigation by creating PFO wetland.

	YES	NO
f. Will project violate a State water quality standard?	☐	☒

Explain: SPLP's implementation of ABACT and ESCP, ECS, IRCP, and SPCC Plans, coupled with Restoration Measures and Compensatory Mitigation, will protect water quality. In addition, 25 Pa. Code § 105.18a was incorporated into the DEP's federally-approved water quality standards program on February 12, 1994. *See* 24 Pa.B. 922. The DEP assures compliance with water quality standards by requiring applicants proposing impacts in wetlands to take measures to maintain and protect these wetland resources. Moreover, 25 Pa. Code § 93.4c(a)(2), also incorporated into the Commonwealth's federally-approved water quality standards program, provides that the DEP will assure protection of Federal and Pennsylvania endangered and threatened species and their critical habitat in or on a surface water, including wetlands. The general and special conditions of this Chapter 105 Permit for the protection of threatened and endangered species and habitat, along with those in the Water Quality Certification, and the applicant's implementation of the HCPs, will assure protection of endangered and threatened species and their critical habitat and meet water quality standards.

g. Will project contribute to the pollution of groundwater or surface water or diminution of resources sufficient to interfere with their uses?	☒	☐

Explain: SPLP's implementation of ABACT and its ESCP, ECS, IRCP, and SPCC Plans, will protect groundwater and surface waters, including EV wetlands, when coupled with implementation of Restoration Measures and Compensatory Mitigation.

h. Will the cumulative effect of this project and other projects result in impairment to wetland resources? ☐ ☒

Explain: SPLP has included a project-wide Cumulative Impacts Assessment in their application. The assessment concludes that the proposed project, along with the consideration of other related and unrelated SPLP projects will not result in a significant impairment to wetland resources of the Commonwealth. While a cover type conversion of 0.405 acre forested wetlands to emergent wetlands is proposed, SPLP will mitigate for this conversion impact by enhancing portions of offsite PFO.

i. Explain how wetlands have been replaced in accordance with 105.20a and list which compensatory replacement method was used.

Explain and List: Wetlands will be restored in the same location and areal extent following pipeline installation. As stated above, SPLP will offset the proposed project-wide forested wetland conversion impacts by enhancing offsite emergent wetlands.

3. Watercourses (check all that apply)

☒ TSF ☒ HQ ☒ CWF ☒ Wild Trout ☒ EV ☒ WWF

a. Name of watercourse See attached tables

b. Will the project have an impact on the following values of the environment?

Natural	☐	☒
Scenic	☐	☒
Historic	☐	☒
Aesthetic	☐	☒
	YES	**NO**

c. Have impacts been avoided and minimized? ☒ ☐

Explain: The proposed project will cross sixty-one (61) watercourses in Chester County. Construction and operation of the project is not anticipated to alter the designated use of the streams crossed in or diminish stream habitat. All timing restrictions associated with trout streams will be adhered to, per Special Conditions and discussed in the JPA Attachment 6, Tab 6C).

To minimize stream impacts, the applicant will cross 24 streams with HDD and two streams with conventional bore crossing methods. HDD/Bore crossing eliminates all temporary impacts normally associated with open cut/trench, but there is a concern for inadvertent return of drilling fluids into the stream. To address this, the applicant has prepared an Inadvertent Return

Assessment, Preparedness, Prevention, and Contingency Plan for the project, as detailed in Attachment 12, Tab C. This plan has been incorporated into the Special Conditions.

Streams not utilizing HDD/Bore crossing methods will be crossed by open-cut. Temporary open-cut stream impacts are proposed to be restored according to Section 11, Enclosure E Part 4 (Impact Avoidance, Minimization, and Mitigation Procedures). Native stream bed material will be separated from other materials for reinstallation after pipe installation. In areas where the stream will not be stable using native materials, riprap stabilization will be utilized. Native material will then be placed as top cover for 6-inches covering the proposed riprap. All riparian areas will be re-planted with native species as shown in the Erosion and Sediment (E&S) Control Plans. Impacts in these areas have been minimized to the maximum extent possible given project restraints, while allowing safe installation of the pipelines (see Attachment 11, Enclosure E, Part 4 for specifics). All streams temporarily impacted and restored will be monitored per the approved monitoring plan.

d. Is project the least environmentally damaging alternative?

List alternatives considered and provide rationale that the
Least damaging alternative has been selected.

SPLP has considered major and minor route alternatives in their consideration of options available for the proposed project. From the start of the route selection process, SPLP has attempted to co-locate the proposed pipelines within existing ROW in an effort to minimize additional environmental impacts. Based on the linear nature of the proposed project, complete avoidance of streams is not practicable. Where determined to be feasible, a trenchless construction method was selected for stream crossings. Where streams will be crossed with an open trench, native stream bed material will be stockpiled for reuse during stream restoration. Dry crossing methods will be utilized to minimize downstream sedimentation. Stabilized temporary stream crossings will be used for equipment movement across all stream. A detailed discussion of alternatives considered can be found in the Alternatives Analysis, Section 3.0 – 3.4.

e. Has the applicant demonstrated that the public benefits of the proposed project outweigh the harm to the environment? ☒ ☐
Public benefits include:

1. Correction and prevention of pollution.
2. Protection of public health and safety.
3. Reduction of flood damages.
4. Development of energy resources.

5. Creation or preservation of significant employment.
6. Provision of public utility services.
7. Other essential social and economic development which benefits a substantial portion of the public.

Explain: (4) and (6). The project includes the construction and maintenance of two parallel natural gas liquid pipelines within an approximately 306.8-mile, 50-fooot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania to Sunoco Pipeline L.P.'s (SPLP's) Marcus Hook facility in Delaware County, Pennsylvania. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, would also be installed in the same ROW from SPLP's Delmont Station in Westmoreland County to the Marcus Hook facility (for approximately 255.8 miles). This will result in the above mentioned public benefits while keeping all impacts to temporary in nature.

		YES	NO
f.	Is the project located in or within 100 feet of a watercourse or body of water that has been designated as a National or State wild or scenic river?	☐	☒
g.	Is the project located in or within 100 feet of a Federal wilderness area?	☐	☒
h.	Is the project located within an area which serves as a habitat of a threatened or endangered species?	☒	☐
i.	Is the project located in waters classified as exceptional value in Chapter 93?	☒	☐
j.	If yes to any "f" thru "i", has the applicant demonstrated that the project will not have an adverse impact upon the public natural resource?	☒	☐

A PNDI Project Environmental Review for linear projects was conducted by the applicant's consultant. PNDI conflicts have been resolved by the incorporation of the following Conservation Plans being implanted:

U.S. Fish and Wildlife Service: USFWS conflicts (bog turtle, Indiana bat), resolved by incorporation of Conservation Plan approved by USFWS by letter dated 10/31/2016.

Pennsylvania Fish and Boat Commission: PFBC conflict (red belly turtle) resolved by incorporation of Conservation Plan approved by PFBC on 10/26/2015.

D. Sources Utilized for Review

1. Quad Sheet (see lat/long in project description and Tables 1, 2 and 3))	☒	☐
2. National Wetlands Inventory Map	☒	☐
3. Special Protection Watersheds Map	☒	☐
4. Scenic Rivers Candidates Map	☒	☐
5. Coastal Zone Management Map	☒	☐
6. County Soil Survey	☐	☒
7. P.N.D.I.	☒	☐
8. State Water Plan	☒	☐
9. Other Agencies' Reviews (See E)	☒	☐
10. Environmental Review Committee (See F)	☐	☒
11. Other (_____)	☐	☐
12. Site Inspection: April 6, 2016	☒	☐
13. Jurisdictional Determination from ACOE	☒	☐
14. Applicants Environmental Assessment	☒	☐

E. Other Agencies' Comments

	Recommendations			
	Approve	***Approve w/Conditions**	****Deny**	**No Comments**
1. Pennsylvania Fish & Boat Commission	☐	☒	☐	☐
2. Pennsylvania Game Commission	☒	☐	☐	☐
3. Pennsylvania Historical & Museum Commission	☐	☐	☐	☒
4. U.S. Fish & Wildlife Service	☐	☒	☐	☐
5. U.S. Army Corps of Engineers	☐	☐	☐	☒
6. National Marine Fisheries	☐	☐	☐	☒
7. Environmental Protection Agency	☐	☐	☐	☒
8. County Conservation District	☐	☐	☐	☒
9. Other PADCNR_____	☐	☒	☐	☐

* Provide explanation of how agency comments were addressed, and attach letters, memos, etc.:

U.S. Fish and Wildlife Service: USFWS conflicts (bog turtle, Indiana bat) have been resolved by incorporation of Conservation Plan approved by USFWS by letter dated 10/31/2016.

Pennsylvania Fish and Boat Commission: PFBC conflict (red belly turtle) resolved by incorporation of Conservation Plan approved by PFBC on 10/26/2015.

PFBC – Division of Environmental Services (DES) - recommended the following special conditions: Wild trout streams - no work shall be done in the stream channel between October 1 and December 31."

Trout stocked streams - no work shall be done in the stream channel between March 1 and June 15 without the prior written approval of the FBC (814.359-5115)."

Both of these seasonal restrictions are stated in the Special Conditions of the permit.

PHMC – SPLP has complied with the State History Code. Final resolution of potential historic property impacts have not yet been received for this project. The project requires a federal permit, and as such potential impacts to historic properties will need to be resolved prior to the federal permit issuance. The permit will include a Special Condition stipulating that SPLP shall protect and promptly report any archeological artifacts discovered during its project to the Bureau for Historical Preservation, Historical and Museum Commission.

U.S. Army Corps of Engineers (ACOE)

The ACOE has indicated that it will issue any federal permits for the pipeline project.

County Conservation District (CCD)

DEP will issue an individual Chapter 102 ESCGP-2 Permit for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing or Treatment issued pursuant to Pennsylvania's Clean Streams Law and Storm Water Management Act (32 P.S. §§ 680.1-680.17) and all applicable implementing regulations (including 25 Pa. Code Chapter 102) .

_____

** If "Deny" is checked, provide response to agency recommendation:

_____

F. Environmental Review Committee Comments Date Presented _____

_____

_____

☐ Minutes attached Do minutes accurately reflect discussion? ☐ Yes ☐ No

G. Attach Meeting Minutes if available or provide a Summary of Pre-Application Meeting - Include dates

and attendee

May 23, 2104 Pre-app meeting conducted in the Rachel Carson Building

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Text Table 1 – Watercourse Crossings

Stream ID	Stream Name	Coordinates	Flow Regime	Bank to Bank Width (feet)	Length of Centerline Stream Crossing at HDD/Bore	Stream Disturbance Length in ROW (feet)			Crossing Method	Ch. 93 Designated Use	PAFBC Stream Designation
						Perm	*Temp*	Total			
S-A66	UNT to South Branch French Creek	40.1470, -75.8274	Ephemeral	3	-	-	-	-	Floodway Only	EV, MF	n/a
S-A68	UNT to South Branch French Creek	40.1375, -75.8106	Ephemeral	3	-	-	-	-	Floodway Only	EV, MF	n/a
S-A70	UNT to Marsh Creek	40.1329, -75.8028	Ephemeral	4	-	*63*	-	63	Dry Crossing	HQ-TSF, MF	n/a
S-A71	UNT to Marsh Creek	40.1310, -75.8001	Perennial	8		*73*	-	73	Bore/ Temporary Bridge	HQ-TSF, MF	n/a
S-B14	South Branch French Creek	40.1436, -75.8209	Perennial	11	-	*76*	-	76	Dry Crossing	EV, MF	n/a
S-B15	UNT to Marsh Creek	40.1246, -75.7923	Perennial	7		*52*	-	52	Bore/ Temporary Bridge	HQ-TSF, MF	n/a
S-B18	UNT to Marsh Creek	40.1031, -75.7567	Perennial	8	-	*61*	-	61	Dry Crossing	HQ-TSF, MF	n/a
S-B19	UNT to Marsh Creek	40.1027, -75.7575	Intermittent	2	-	*1*	-	1	Dry Crossing	HQ-TSF, MF	n/a
S-B20	UNT to Marsh Creek	40.1032, -75.7568	Intermittent	2.5	-	-	-	-	Floodway Only	HQ-TSF, MF	n/a
S-B34	UNT to School House Run	39.9525, -75.5128	Intermittent	2	n/a	-	-	-	HDD Floodway	HQ-TSF, MF	n/a
S-B35	UNT to School House Run	39.9514, -75.5117	Ephemeral	3	3	-	-	-	HDD	HQ-TSF, MF	n/a
S-B79	UNT to Valley Creek	40.0297, -75.6187	Perennial	7	7	-	-	-	HDD	CWF, MF	Trout Stocked
S-B81	Valley Creek	40.0314, -75.6200	Perennial	12	12	-	-	-	HDD	CWF, MF	Trout Stocked
S-C56	UNT to South Branch French Creek	40.1392, -75.8135	Perennial	6	-	*87*	-	87	Dry Crossing	EV, MF	n/a
S-C57	UNT to South Branch French Creek	40.1390, -75.8136	Ephemeral	3	-	-	-	-	Floodway Only	EV, MF	n/a

S-C58	UNT to South Branch French Creek	40.1384, -75.8126	Perennial	4	-	*53*	-	53	Dry Crossing	EV, MF	n/a
S-C59	UNT to Valley Creek	40.0379, -75.6328	Perennial	8	8	-	-	-	HDD	CWF, MF	Trout Stocked
S-C60	UNT to Valley Creek	40.0377, -75.6326	Ephemeral	3	3	-	-	-	HDD	CWF, MF	Stocked Trout
S-C61	UNT to Valley Creek	40.0383, -75.6339	Perennial	9	9	*61*	-	61	HDD/ Temporary Bridge	CWF, MF	Trout Stocked
S-C62	UNT to Valley Creek	40.0385, -75.6338	Intermittent	6	n/a	-	-	-	HDD Floodway	CWF, MF	Trout Stocked
S-C63	UNT to Valley Creek	40.0477, -75.6503	Perennial	8	8	-	-	-	HDD	CWF, MF	Trout Stocked
S-C64	UNT to Valley Creek	40.0496, -75.6552	Perennial	5	5	*60*	-	60	HDD/ Temporary Bridge	CWF, MF	Trout Stocked
S-C65	UNT to Valley Creek	40.0494, -75.6557	Perennial	3	n/a	-	-	-	HDD Floodway	CWF, MF	Trout Stocked
S-C66	UNT to Valley Creek	40.0368, -75.6288	Ephemeral	4	-	*43*	-	43	Dry Crossing/ Temporary Bridge	Drains to CWF, MF	Trout Stocked
S-C67	UNT to Shamona Creek	40.0636, -75.6813	Intermittent	1.5	1.5	-	-	-	HDD	HQ-TSF, MF	Wild Trout
S-C68	UNT to Shamona Creek	40.0634, -75.6810	Intermittent	3	3	-	-	-	HDD	HQ-TSF, MF	Wild Trout
S-C69	UNT to Shamona Creek	40.0632, -75.6803	Ephemeral	2	2	-	-	-	HDD	HQ-TSF, MF	Wild Trout
S-C72	UNT to Black Horse Creek	40.0845, -75.7203	Perennial	4	-	*79*	-	79	Dry Crossing	HQ-TSF, MF	Wild Trout
S-C73	Black Horse Creek	40.0852, -75.7227	Perennial	40	-	*50*	-	50	Dry Crossing	HQ-TSF, MF	Wild Trout
S-C74	UNT to Black Horse Creek	40.0857, -75.7223	Ephemeral	4	-	-	-	-	Floodway Only	HQ-TSF, MF	Wild Trout
S-C87	UNT to Marsh Creek	40.0720, -75.6965	Perennial	10	10	-		-	HDD	HQ-TSF, MF	n/a
S-C89	UNT to Marsh Creek	40.0720, -75.6963	Ephemeral	4	4	-	-	-	HDD	HQ-TSF, MF	n/a
S-C90	UNT to Marsh Creek	40.0721, -75.6965	Ephemeral	3	3	-	-	-	HDD	HQ-TSF, MF	n/a
S-C91	UNT to Marsh Creek	40.0723, -75.6973	Intermittent	4	4	-	-	-	HDD	HQ-TSF, MF	n/a
S-C92	UNT to Marsh Creek	40.0726, -75.6972	Ephemeral	2.5	2.5	-	-	-	HDD	HQ-TSF, MF	n/a
S-C93	UNT to Marsh Creek	40.0753, -75.7020	Intermittent	2.5	-	*68*	*26*	94	Dry Crossing/ Temporary Bridge	HQ-TSF, MF	n/a

S-C94	UNT to Marsh Creek	40.0753, -75.7025	Ephemeral	2	-	72	-	72	Dry Crossing	HQ-TSF, MF	n/a
S-C96	UNT to Marsh Creek	40.0779, -75.7076	Perennial	6	-	71	-	71	Dry Crossing/ Temporary Bridge	HQ-TSF, MF	n/a
S-C97	UNT to Marsh Creek	40.0769, -75.7062	Perennial	4	-	-	-	-	Floodway Only	HQ-TSF, MF	n/a
S-C98	UNT to Marsh Creek	40.0770, -75.7055	Intermittent	3	-	-	-	-	Floodway Only	HQ-TSF, MF	n/a
S-H2	UNT to Shamona Creek	40.0653 -75.6841	Ephemeral	3	n/a	-	-	-	HDD Floodway	HQ-TSF, MF	Wild Trout
S-H3	UNT to Shamona Creek	40.0642, -75.6824	Perennial	10	10	-	-	-	HDD	HQ-TSF, MF	Wild Trout
S-H4	UNT to Shamona Creek	40.0644, -75.6825	Ephemeral	1	1	-	-	-	HDD	HQ-TSF, MF	Wild Trout
S-H5	Shamona Creek	40.0615, -75.6776	Perennial	12	12	-	-	-	HDD	HQ-TSF, MF	Wild Trout
S-H6	UNT to Shamona Creek	40.0616, -75.6773	Ephemeral	1	n/a	-	-	-	HDD Floodway	Drains to HQ-TSF, MF	Wild Trout
S-H9	UNT to Marsh Creek	40.1002, -75.7524	Perennial	8	-	74	-	74	Dry Crossing	HQ-TSF, MF	n/a
S-H10	UNT to Marsh Creek	40.0794, -75.7103	Intermittent	3	3	-	-	-	HDD	HQ-TSF, MF	n/a
S-H11	UNT to Marsh Creek	40.0793, -75.7105	Intermittent	1.5	1.5	-	-	-	HDD	HQ-TSF, MF	n/a
S-H30	East Branch Chester Creek	40.0090, -75.5921	Perennial	10	10	-	-	-	HDD	TSF, MF	n/a
S-H31	UNT to East Branch Chester Creek	40.0086, -75.5918	Perennial	3	n/a	-	-	-	HDD Floodway	TSF, MF	n/a
S-H32	UNT to East Branch Chester Creek	40.0085, -75.5917	Intermittent	7	n/a	-	-	-	HDD Floodway	TSF, MF	n/a
S-H33	UNT to East Branch Chester Creek	40.0086, -75.5915	Ephemeral	4	n/a	-	-	-	HDD Floodway	TSF, MF	n/a
S-H52	Marsh Creek	40.0917, -75.7323	Perennial	45	-	51	26	77	Dry Crossing	HQ-TSF, MF	n/a
S-Q81	UNT to Marsh Creek	40.0923, -75.7323	Intermittent	5	-	-	-	-	Floodway Only	HQ-TSF, MF	n/a
S-Q200	UNT to Marsh Creek	40.0927, -75.7330	Intermittent	4	-	-	-	-	Floodway Only	HQ-TSF, MF	n/a
S-Q61	UNT to Ridley Creek	40.0053, -75.5798	Ephemeral	3	-	-	-	-	Floodway Only	HQ-TSF, MF	Trout Stocked
S-Q82	UNT to Marsh Creek	40.0913, -75.7296	Ephemeral	4	-	-	-	-	Floodway Only	HQ-TSF, MF	n/a

S-Q83	UNT to Marsh Creek	40.0909, -75.7287	Perennial	5	5	-	-	-	HDD	HQ-TSF, MF	n/a
S-Q84	UNT to Marsh Creek	40.0909, -75.7285	Intermittent	2	n/a	-	-	-	HDD Floodway	Drains to HQ-TSF, MF	n/a
S-Q85	UNT to Marsh Creek	40.0893, -75.7271	Intermittent	5	n/a	-	-	-	HDD Floodway	HQ-TSF, MF	n/a
S-Q86	UNT to Marsh Creek	40.0896, -75.7271	Ephemeral	7	7	-	-	-	HDD	HQ-TSF, MF	n/a
							61 Streams and floodways				

Source of Text Table 1: SPLP JPA, Environmental Assessment, Attachment 11, Table 3, December 1, 2016

Text Table 2 – Wetland Crossings

Wetland ID	USFWS Cowardin Classification[1]	Coordinates	Crossing Method[2,3]	Length of Centerline Crossing (feet)[4]	PADEP Permanent Impact[5]	PADEP Temporary Impact[5]	Exceptional Value or Other (Basis of Exceptional Value)
A46	PEM	40.1472, -75.8272	Open Cut	16	0.015	-	EV (Scenic; EV Stream)
B12	PEM	40.1436, -75.8217	Open Cut	-	0.001	-	EV (EV Stream)
B13	PEM	40.1437, -75.8212	Open Cut	51	0.031	0.001	EV (EV Stream)
B14	PEM	40.1437, -75.8204	Open Cut	31	0.024	-	EV (EV Stream)
B15	PEM	40.1246, -75.7921	Bore/ Temporary Matting	131	0.162	-	Other
B19	PEM	40.1029, -75.7571	Open Cut	345	0.479	-	Other
B71	PFO	40.0306, -75.6195	HDD	304	0.021	-	Other
C33	PEM	40.1392, -75.8135	Open Cut	164	0.193	-	EV (EV Stream)
C34	PEM	40.1390, -75.8127	Open Cut	11	0.005	-	EV (EV Stream)
C35	PEM	40.1387, -75.8125	Open Cut	125	0.145	-	EV (EV Stream)
C37	PEM	40.0635, -75.6809	HDD	288	0.02	-	EV (Wild Trout stream)
	PFO	40.0633, -75.6809	HDD	32	0.002	-	EV (Wild Trout Stream)
C38	PEM	40.0845, -75.7211	Open Cut	65	0.077	-	EV (BT Adj; Wild Trout Stream)
C40	PEM	40.0856, -75.7227	Open Cut	121	0.1	-	EV (BT Adj; Wild Trout Stream)
C42	PEM	40.0705, -75.6936	Open Cut	465	0.334	-	Other
C43	PEM	40.0721, -75.6963	HDD	899	0.062	-	Other
	PFO	40.0717, -75.6970	HDD	720	0.048	-	Other
C47	PEM	40.0775, -75.7068	Open Cut/ Temporary Matting	615	0.704	-	Other
C48	PEM	40.0786, -75.7087	Open Cut/ Temporary Matting	95	0.093	-	Other
C49	PEM	40.1089, -75.7676	Open Cut	846	0.949	-	Other
H15	PEM	40.0995, -75.7505	Open Cut	198	0.125	-	Other
	PFO	40.0998, -75.7516	Open Cut	47	0.047	-	Other
H16	PEM	40.1003, -75.7522	Open Cut	41	0.041	-	Other

H17	PEM	40.0794, -75.7104	HDD	151	0.01	-	Other
K21	PEM	40.0222, -75.6132	HDD	15	0.001	-	Other
Q75	PFO	40.0925, -75.7324	Bore	55	0.004	-	Other
Q76	PSS	40.0909, -75.7290	HDD	127	0.004	-	Other
Q77	PEM	40.0898, -75.7275	HDD	240	0.016	-	Other
25 Wetlands			**25 Crossings**	**6,198 feet 1.174 miles**	**3.713 acres**	**0.001 acre**	

Source of Table 2: SPLP JPA, Environmental Assessment, Attachment 11, Table 2, December 1, 2016

Text Table 3 – Floodplain Crossings

Stream ID[1]	Stream Name	Coordinates	Crossing Method[2]	Permanent Floodplain Disturbance (acre)[3, 5]	Temporary Floodplain Disturbance (acre)[4, 5]	Total Floodplain Disturbance (acre)
S-A71	UNT to Marsh Creek	40.1310, -75.8002	Bore/ Open Cut	*0.099*	*0.165*	0.264
S-B14	South Branch French Creek	40.1436, -75.8209	Open Cut	*0.214*	*0.198*	0.412
S-B15	UNT to Marsh Creek	40.1246, -75.7923	Bore/ Open Cut	*0.084*	*0.004*	0.088
S-B79	UNT to Valley Creek	40.0297, -75.6187	HDD	*0.051*	-	0.051
S-B81	Valley Creek	40.0314, -75.6200	HDD	*0.459*	-	0.459
S-C59	UNT to Valley Creek	40.0379, -75.6328	HDD/ Travel	*0.950*	*1.031*	1.981
S-C73	Black Horse Creek	40.0852, -75.7228	Open Cut	*0.198*	*0.127*	0.325
S-C93	UNT to Marsh Creek	40.0753, -75.7021	Open Cut	*1.189*	*0.451*	1.640
S-H30	East Branch Chester Creek	40.0090, -75.5921	HDD	*0.071*	-	0.071
S-H52	Marsh Creek	40.0916, -75.7322	Open Cut	*0.249*	*0.193*	0.442
S-Q83	UNT to Marsh Creek	40.0909, -75.7287	HDD	*0.001*	-	0.001
			11 Floodplains	***3.565 acres***	***2.169 acres***	**5.734 acres**

Source of Text Table 3: SPLP JPA, Environmental Assessment, Attachment 11, Table 4, December 1, 2016

Acronyms and Abbreviations

ABACT Antidegradation Best Available Combination of Technologies
APE Area of Potential Effect(s)
ASME American Society of Mechanical Engineers
ATW Approved Trout Waters
ATWS Additional Temporary Workspace
BDA Biological Diversity Area
CA Crossing Area
CAB Conventional Auger Boring (jack and bore)
CIA Cumulative Impact Analysis
CIAA Cumulative Impact Assessment Area
CNHI County Natural Heritage Inventory
CRGIS Cultural Resources Geo Information System
CROW Construction Right-of-way
EFH Essential Fish habitat
IBA Important Bird Area
IR Inadvertent Return
JPA Joint Permit Application
HDD Horizontal Directional Drilling
LCA Landscape Conservation Area
MBTA Migratory Bird Treaty Act
ME1 Mariner East One
ME2 Mariner East Two
MOC Management of Change (change the baseline route alternatives to increase avoidance)
N No (not technical feasible)
NHA Natural Heritage Area
NHL National Historic Landmark
NHPA National Historic Preservation Act
NRHP National Register of Historic Places
P Potentially (potentially technical feasible)
PAGWIS DCNR's Groundwater Database
PEM Palustrine Emergent Wetland
PFO Palustrine Forested Wetland
PHMSA Pipeline and Hazardous Material Safety Administration (USDOT)
PPP Pennsylvania Pipeline Project (aka Mariner Two
PSS Palustrine Shrub-scrub Wetland
PPC Pollution Prevention and Contingency Plan
S Stream
SA Stream Area
SGL State Game Land
SHPO State Historic Preservation Office (=PHMC)
STS Stocked Trout Stream
TA Trenchless Area
TCFA Trenchless construction feasibility analysis
TFA Trenchless Feasibility Assessment
TNR Trout Natural Reproduction
USACOE Army Corps of Engineers
W Wetland

WR Water Withdrawal Point
Y Yes (technically feasible)