PennEast Pipeline Company, LLC

PENNEAST PIPELINE PROJECT

L4 - ENVIRONMENTAL ASSESSMENT MODULE 4
MITIGATION PLAN
LUZERNE COUNTY

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Submitted by:

PennEast Pipeline Company, LLC

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APPENDICES

Acronyms and Abbreviations

BMP	best management practice
Coco mats	coconut coir fiber mats
dbh	diameter at breast height
E&SCP	Erosion and Sediment Control Plan
EA	Environmental Assessment
EA Form	Environmental Assessment Form
EV	Exceptional Value
HQ	High Quality
JPA	Joint Permit Application
LOD	limit of disturbance
PADEP	Pennsylvania Department of Environmental Protection
PCSM	Post-Construction Stormwater Management
PEM	palustrine emergent
PennEast	PennEast Pipeline Company, LLC
PFO	palustrine forested
Plan	Upland Erosion Control, Revegetation and Maintenance Plan
PPC	Preparedness, Prevention, and Contingency
Project	PennEast Pipeline Project
PSS	palustrine scrub-shrub
ROW	right-of-way
TGD	Technical Guidance Document
USACE	U.S. Army Corps of Engineers

Module S4: Mitigation Plan

In accordance with the requirements contained within the Pennsylvania Department of Environmental Protection's (PADEP) Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Document (TGD) (Document No. 310-2137-006, 12/16/2017) and the assessment criteria detailed in Module 4 of the Environmental Assessment (EA) Form (EA Form) Instructions (Document No. 3150-PM-BWEW0017, Revised 6/2017), PennEast Pipeline Company, LLC (PennEast) has prepared this Mitigation Plan to support its Joint Permit Application (JPA) for the PennEast Pipeline Project (Project).

S4.A Impact Avoidance and Minimization Measures

PennEast has selected the proposed pipeline route to avoid and minimize impacts to wetlands and watercourses to the greatest extent practicable while maintaining the constructability, economic, and safety standards of the Project. As described in greater detail in the Alternatives Analysis (JPA Section S), the centerline alignment and workspace limits were designed to avoid wetlands and watercourses to the extent practicable. Multiple route alternatives and route modifications were assessed and/or implemented to avoid unnecessary impacts to various resources, including aquatic habitats. Given the linear nature of the Project, total avoidance of aquatic habitats is not feasible and therefore installation of the proposed Project facilities will result in temporary and permanent impacts to wetlands and watercourses, along with permanent impacts to select areas of palustrine forested (PFO) wetlands via a cover type conversion to palustrine emergent (PEM) or palustrine scrub-shrub (PSS) cover. To mitigate unavoidable impacts, the workspace was reduced to minimize impacts. These features, along with the proposed avoidance or minimization actions, are listed in Section 10 and Section 11 of the Alternatives Analysis (JPA Section S).

S4.B Impacted Resource Mitigation: Repair, Rehabilitation, and Restorative Actions

The proposed repair, rehabilitation and restorative actions are considered 'mitigation' and are referenced to as such in this document. The sections below provide a detailed description of the proposed best management practices (BMPs) contained within the Erosion and Sediment Control Plan (E&SCP, JPA Section M) that will minimize impacts during construction, restoration and operation of the Project. The Project specific E&SCP (JPA Section M) was developed in consultation with applicable state and federal regulatory agencies and contains specific procedures related to construction activities for linear utilities affecting aquatic habitats associated with wetland and riparian communities. Specifically, the wetland and watercourse construction mitigation procedures, erosion and sediment control measures and revegetation and post-construction monitoring processes that are detailed in this document were developed from information contained within the FERC's Upland Erosion Control, Revegetation and Maintenance Plan (Plan) (FERC, 2013a) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures) (FERC, 2013b), the PADEP Erosion and Sediment Control Manual (PADEP, 2012) as well as the permit requirements cited within the PADEP Chapter 102 and 105 regulations.

PennEast has also developed a Wetland and Riparian Reforestation Plan (Appendix L-4A), which outlines the onsite restoration that is proposed at each wetland and riparian crossing. Wetland boundaries have been defined during wetland delineations in accordance with the Modified Routine Wetland Delineation

Method as described in the U.S. Army Corps of Engineers' (USACE) *Wetland Delineation Manual, Technical Report Y-87-1* (Environmental Laboratory, 1987) using wetland criteria detailed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0), and *Northcentral and Northeast Region* (Version 2.0) (USACE, 2012a and 2012b), as appropriate. The accuracy of the delineation boundaries were verified by USACE staff during site visits conducted during 2015-2018. Riparian buffer boundaries have been defined as land within 150 feet of High Quality (HQ) and Exceptional Value (EV) watercourses, and within 100 feet of other watercourses. After each crossing is constructed, PennEast will restore pre-construction contours before seeding the areas with a conservation wetland seed mix (Ernst FACW Meadow Mix, ERNMX-122) and a riparian seed mix (Ernst Riparian Buffer Mix, ERNMX-178), respectively. In riparian buffers where slope exceeds 10%, PennEast's Standard Upland Right-of-Way (ROW) mix will be used.

In addition to the seeded areas, PennEast proposes to replant trees and shrubs within forested riparian buffers and PFO and PSS wetlands, with the exception of a 30-foot wide corridor that is centered on the pipeline. This 30-foot wide ROW will be maintained periodically during Project operation, and to maintain the integrity of the pipeline coating, trees greater than 20 feet tall or 3 inches diameter at breast height (dbh) will be removed. The proposed planting mixes are outlined in Table 1 of the Wetland and Riparian Reforestation Plan (Appendix L-4A). The trees and shrubs will be planted at approximate 10-foot centers. The trees will be protected from herbivory using spiral tree wraps, and 24-inch diameter coconut coir fiber mats (Coco mats) will be installed around each planted tree to protect plants from weeds and frost. PennEast will monitor survivorship for two years. If survivorship is below 75% within a restored wetland or riparian area, PennEast will discuss remediation measures with the PADEP and USACE.

S4.B.1 Identify and describe repair, rehabilitation, or restorative actions taken to rectify an impacted resource.

Watercourses

Construction of the Project in Luzerne County will result in the temporary crossing of 75 watercourses and floodways (see Table LU-L2-3, located in Section S2.B of Module 2). Temporary impacts to surface waters during construction activities include watercourse bank vegetation removal, watercourse bank disturbances and, in some instances, temporary flow modifications during the installation of the dry-crossing construction. To minimize impacts, PennEast will implement its Project-specific E&SCP (JPA Section M), Site Restoration Plan (ESCGP Sections 3-1 and 3-2), Post-Construction Stormwater Management Plans (PCSM, ESCGP Section 3-3), Preparedness, Prevention, and Contingency Plan (PPC Plan, JPA Section L-3B), Wetland and Riparian Reforestation Plan (Appendix L-4A), and the FERC Procedures (2013b). Such plans would be implemented throughout the duration of the Project to reduce risks of spills or leaks, erosion and sedimentation and stormwater runoff from construction areas with exposed soils. Erosion controls, such as compost filter socks, straw bales and/or silt fencing, would be utilized in an effort to avoid the transport of disturbed sediments to surface watercourses to the maximum extent practicable. To ensure BMPs are correctly implemented, Environmental Inspectors (EIs) will oversee the installation of erosion control devices. Once installed, BMPs would be monitored by EIs and maintained by contractors until grading and restoration efforts are finalized and complete stabilization is achieved.

PennEast proposes to cross watercourses using a combination of trenchless and conventional installation methods as described in Section 11.1 of the Alternatives Analysis (JPA Section S). To minimize the potential for adverse effects to wetlands and watercourses, PennEast will implement the construction BMPs described in Section 11.2 of the Alternatives Analysis (JPA Section S).

Construction and restoration techniques to be used would be those typical for cross-country construction. Completed stream crossings using the flume or damp and pump methods would be stabilized before returning flow to the channel. Original streambed and bank contours would be re-established, and mulch, jute thatching or bonded fiber blankets would be installed on the stream banks to stabilize seeded areas. Where the flume technique is used, stream banks would be stabilized before removing the flume pipes and returning flow to the watercourse channel. All natural flow patterns will be restored to pre-construction conditions upon Project completion.

Seeding, fertilizing and mulching of disturbed stream approaches would be completed in accordance with the FERC Procedures (FERC, 2013b) and after final grading, weather and soil conditions permitting. As stated in the Wetland and Riparian Reforestation Plan (Appendix L-4A), planting and seeding may occur at different times of the year, or in different growing seasons. If there will be a delay in planting, a cover crop will be installed at 30 pounds/acre. Where necessary, slope breakers would be installed adjacent to stream banks to minimize the potential for erosion. Sediment barriers, such as silt fence and/or straw bales, would be maintained across the ROW until permanent vegetation is established. Temporary equipment bridges would be removed following construction and restoration.

Best Management Practices for Watercourse Crossings

To further minimize the potential for adverse effects to watercourses, PennEast would implement the following BMPs related to the restoration of impacted features:

- PennEast will return all watercourse banks to pre-construction contours or to stable angle of repose as approved by the EI;
- PennEast will segregate and stockpile native streambed material for reinstallation after backfill;
- PennEast will restore stream flow after the banks have been temporarily stabilized;
- PennEast will install erosion control fabric anchored with staples or other appropriate devices along watercourses with low flow conditions;
- PennEast will remove all temporary BMPs when replaced by permanent erosion controls or when restoration of adjacent upland areas is successful;
- PennEast will install permanent trench plugs at the edges of watercourses before the trench is backfilled to restore the hydrology to preconstruction conditions;

- PennEast will install erosion control fabric 50 feet from top of bank on watercourses and 100 feet from top of bank for HQ/EV watercourses to help stabilize the soil until the permanent vegetative cover is achieved;

- PennEast will revegetate adjacent floodplain locations utilizing PADEP approved measures contained within the E&SCP (JPA Section M).

The construction and restoration procedures identified above are expected to effectively facilitate the proper restoration of impacted watercourses.

Floodways

As identified in the Aquatic Resources Impact Tables in JPA Section A-1, approximately 28.3 acres of the Project in Luzerne County will temporarily impact floodways, which includes 21.7 acres of impacts within the temporary workspace and 6.6 acres within the permanent ROW for riverine and lacustrine resources. Given the linear nature of the proposed Project, temporary impacts within areas subject to flooding is unavoidable. To mitigate for temporary disturbances within floodway locations, PennEast will implement the BMPs and construction procedures detailed in the E&SCP (JPA Section M).

PennEast will restore and revegetate temporary workspace areas to minimize or avoid permanent impacts on vegetated floodway areas. Restoration and revegetation will comply with state and federal regulations and monitoring requirements. The construction workspace will be restored to pre-construction contours and is not anticipated to result in increased flood elevations or encroachment within floodways. Additionally, all permanent components of the Project located in floodway areas will be installed at a minimum of 3 feet below surface grade and surfaces will be restored to pre-construction grades and conditions.

Riparian Areas

Similar to the discussion provided for floodways, complete avoidance of riparian corridors is not feasible due to the linear nature of the pipeline Project. Installation of the pipeline facilities will result in temporary vegetation removal as well as surface disturbances within the riparian areas associated with the Project. As mitigation for these temporary disturbances, PennEast will employ multiple measures to reduce the extent and duration of Project impacts to riparian communities which include, but are not limited to the following:

- PennEast will limit the removal of stumps in wetlands and along watercourses to the trench line and what is necessary to safely install the equipment crossings to promote natural revegetation and surface stabilization;

- PennEast will utilize a riparian conservation seed mix within 150 feet of HQ/EV watercourses and within 100 feet of other watercourses. This seed mix will be used to revegetate the entire limit of disturbance (LOD) in riparian areas where slopes are less than 10%. Tree and shrub plantings will also occur in forested riparian buffers, where all workspace outside of the 30’ maintained ROW will be planted.

As stated in the Wetland and Riparian Reforestation Plan (Appendix L-4A), the Ernst Riparian Buffer Mix (ERNMX-178), or an alternative conservation riparian seed mix that contains similar species, will be utilized as the riparian conservation seed mix. Riparian areas that have a slopes >10% will be seeded with the standard Upland ROW seed mix (E&SCP, JPA Section M).

Wetlands

PennEast has routed the proposed pipeline facilities and work areas to avoid and minimize effects on wetlands to the greatest extent practicable. The routing process has allowed PennEast to identify a constructible pipeline alignment that will minimize disturbances on the environment while maintaining engineering standards and safety. As a result, construction of the proposed Project in Luzerne County will result in the temporary crossing of 51 wetlands. Detailed location, cover type classification and construction and post-construction impact information for each field-delineated wetland impacted by the Project can be found in the Aquatic Resources Impact Table in JPA Section A-1. Temporary impacts to wetlands during construction activities include the clearing of vegetation, the placement of fill structures and surface disturbances associated with the establishment of access and trenching operations. To minimize impacts, PennEast will implement its Project-specific E&SCP (JPA Section M), Site Restoration Plan (ESCGP Sections 3-1 and 3-2), Post-Construction Stormwater Management Plans (PCSM, ESCGP Section 3-3), Wetland and Riparian Reforestation Plan (Appendix L-4A), and the FERC's Procedures (FERC, 2013b). Such plans would be implemented throughout the duration of the Project to reduce risks of spills or leaks, erosion and sedimentation and storm water runoff from construction areas with exposed soils. Erosion controls, such as compost filter socks, would be utilized in an effort to avoid the transport of disturbed sediments to wetlands to the maximum extent practicable. To ensure BMPs are correctly implemented, EIs will oversee the installation of erosion control devices and once installed, BMPs would be monitored by EIs and maintained by contractors until grading and restoration efforts are finalized and permanent stabilization is achieved.

PennEast proposes to cross wetlands using a combination of trenchless and conventional installation methods as described in Section 11.1 of the Alternatives Analysis (JPA Section S). To minimize the potential for adverse effects to wetlands and watercourses, PennEast will implement the construction BMPs described in Section 11.2 of the Alternatives Analysis (JPA Section S).

Following installation of the pipeline facilities, all wetlands crossed by the Project will be restored to their original pre-construction condition, which includes restoration of the existing hydric soils, surface contours, drainage patterns and hydrophytic vegetation. Permanent fill or permanent loss of wetland areas associated with the Project are limited to the filling of 0.01 acre of isolated emergent wetlands to facilitate access to a aboveground facility, which is located in Carbon County. Although under 25 Pa. Code Section 105, operational and maintenance procedures will be considered a permanent impact, the overall loss of wetlands Project-wide will be limited to the de minimis fill impact described above and the cover type conversion of PFO and PSS wetlands (1.8 acres within Luzerne County) to an emergent cover type at crossing locations within 15 feet of the pipeline. In total, the sum of PFO and PSS wetlands that will be subject to cover type conversion is a small percentage of the PFO and PSS wetlands that were delineated within the Project's study corridor in Luzerne County. There will be no net loss of wetlands in Luzerne County associated with the Project.

Best Management Practices for Wetland Crossings

To minimize the potential for adverse effects to wetlands, PennEast will implement the following BMPs related to the restoration of impacted features:

- PennEast will minimize vegetation clearing where feasible and stumps that do not interfere with travel or installation of the pipeline will be left in place to allow for re-sprouting following construction and restoration;
- PennEast will segregate topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated;
- PennEast will install permanent trench plugs at the edges of wetlands, and at 100' intervals within wetlands exceeding 100', before the trench is backfilled to restore hydrology to preconstruction conditions;
- PennEast will stabilize disturbed ROW locations through the distribution of seed and mulch as a temporary stabilization measure following backfilling of the trench and grading of surface locations to ensure proper permanent revegetation of the ROW;
- PennEast will not use fertilizer, lime or mulch within wetlands unless required in writing by the appropriate federal or state agency; and
- PennEast will conduct annual post-construction ROW monitoring of restored wetland locations for a minimum of two years, or until restoration is considered successful, to ensure success of restoration efforts and implement any necessary corrective actions and additional monitoring for resource locations failing to meet the revegetation success standards identified for the Project (see Section S4.D).

The construction and restoration procedures identified above are expected to effectively facilitate the proper restoration and revegetation of wetland communities.

As stated in the Wetland and Riparian Reforestation Plan (Appendix L-4A), Ernst FACW Meadow Mix (ERNMX-122), or an alternative conservation wetland seed mix that contains similar species, will be used to stabilize impacted wetlands. Additionally, impacted PSS wetlands will be replanted with wetland shrub species and PFO wetlands will be replanted with wetland tree and shrub species. In both scenarios, planting will occur within the impacted wetland, but outside of the 30-foot maintained ROW.

S4.B.2 Identify and discuss any proposed preservation and maintenance operations that will be taken to reduce or eliminate an impact during the life of the Project.

During maintenance operations, the following actions will be taken to reduce or limit impacts during the life of the Project:

- PennEast will limit routine vegetation mowing or clearing of wetland or riparian areas during maintenance operations. Adjacent to watercourses, a riparian buffer will be maintained and permanently revegetated with native plant species across the entire construction ROW. Routine vegetation mowing or clearing will not be conducted over the full width of the generally 50-foot wide permanent ROW in wetlands or forested riparian buffers. To facilitate periodic corrosion/leak surveys, a 10-foot corridor centered over the pipeline will be maintained in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline with greater than 3 inch dbh or are greater than 20 feet tall that could compromise the integrity of the pipeline may be cut and removed from the 30-foot wide maintained right-of-way. PennEast will not conduct any routing vegetation mowing or mechanical clearing in wetland or riparian areas that are between horizontal directional drill entry and exit points;

- PennEast will only conduct routine mowing and clearing of riparian and wetland areas between April 15 – August 1 of any year;

- PennEast will not use herbicides or pesticides in or within 100 feet of a wetland or watercourse, except as allowed by the appropriate land management or state agency; and

- PennEast will monitor and record the success of wetland revegetation annually for a minimum of two years or until wetland revegetation is successful in accordance with the success criteria in the Post-Construction Wetland and Watercourse Monitoring Plan (see Appendix L-4C):

    - The affected wetland must meet wetland criteria, including dominance of hydrophytic vegetation;
    - Vegetation must be at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction;
    - Invasive species or noxious weed percent aerial cover, if present, does not exceed the abundance of invasive species in the adjacent areas that were not disturbed by construction.

S4.C Compensatory Mitigation

No net loss to wetlands or watercourses will occur within the pipeline corridor; PennEast will return all wetlands within the pipeline ROW to pre-construction contours and will restore natural flow conditions to all affected watercourses. Approximately 0.01 acre (604 square feet) of isolated PEM wetlands will be filled to accommodate construction and operation of the Kidder Compressor Station in Carbon County. Permanent wetland impacts within the pipeline corridor will be associated with the conversion of PFO and PSS wetlands to PSS and PEM wetlands and will be limited to a 30-foot wide maintenance corridor within the permanent ROW. PennEast is proposing offsite compensatory mitigation to compensate for the permanent impacts to wetland cover types. PFO impacts would be mitigated at a 2:1 ratio and PSS impacts would be mitigated at a 1.5:1 ratio.

PennEast has contracted WHM Solutions, Inc. (WHM) to prepare a Compensatory Wetland Mitigation Plan, which is attached as Appendix L-4B. This plan outlines the plan objectives, site selection criteria,

baseline information for each of the three proposed mitigation sites, the credit determination methodology, and the mitigation work plan. One site has been selected in the Upper Central Susquehanna River Subbasin (Subbasin 2), and two sites have been selected in the Central Delaware River Subbasin (Subbasin 5). Each mitigation site consists of marginal agricultural land that has been historically or is currently used for pasture, hay harvesting, and/or growing corn or other small grain crops. Each site is bisected by or abutting one or more watercourses. Wetlands at each site would be enhanced by tree and shrub plantings and retiring current pasturing and agricultural operations. The enhancements will increase functions and values of the degraded wetlands as they develop into mixed wetland / riparian buffer complexes. Functional improvements include water quality benefits through increased sediment and nutrient sequestration, floral and vegetation diversity, and enhanced wildlife habitat. The mitigation sites would be protected in perpetuity through the establishment of Declarations of Restrictive Covenants Agreements and demarcation of the conservation area.

On behalf of PennEast, WHM would monitor each site for a period of not less than five years. Monitoring of the sites will identify the progression of the mitigation areas toward the performance standards outlined in the Compensatory Wetland Mitigation Plan. For any areas that are not progressing toward the performance standards, WHM would follow the adaptive management plan and implement appropriate remedial actions or measures. Monitoring reports will be provided to permitting agencies.

S4.D Monitoring Plan

PennEast selected the proposed pipeline route to avoid and minimize effect to wetlands and watercourses to the greatest extent possible while maintaining the economic and safety standards of the Project. To minimize temporary impacts, PennEast would implement an approved E&SCP (JPA Section M), Site Restoration Plan (ESCGP Sections 3-1 and 3-2), Post-Construction Stormwater Management Plans (PCSM, ESCGP Section 3-3), Wetland and Riparian Reforestation Plan (Appendix L-4A), and FERC's Procedures (FERC 2013b). Such plans would be implemented throughout the duration of the Project to reduce risks of spills or leaks, erosion and sedimentation, and stormwater runoff from construction areas with exposed soils. The Project area that will be temporarily impacted will be restored to original grade, stabilized, and vegetated in accordance with the E&SCP (JPA Section M). To ensure the BMPs are correctly implemented, erosion controls would be monitored until grading and restoration efforts are finalized.

PennEast will monitor and record the success of the wetland and watercourse restoration through annual post-construction monitoring for a minimum of two years, or until restoration is considered successful. The proposed Post-Construction Wetland and Watercourse Monitoring Plan is attached as Appendix L-4C.

PennEast will also monitor the success of the offsite compensatory mitigation sites. Periodic inspections will be performed by qualified personnel for a period of at least five consecutive growing seasons. The inspections will take place at an interval of not less than twice per year for the first two years and not less than once per year during the following three years, or as directed by period requirements. Details regarding the proposed monitoring schedule, performance criteria and reporting can be found in the Compensatory Wetland Mitigation Plan that is attached as Appendix L-4B.

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