PennEast Pipeline Company, LLC

PENNEAST PIPELINE PROJECT

L3 - ENVIRONMENTAL ASSESSMENT MODULE 3

PROJECT IMPACTS

CARBON COUNTY

REVISED OCTOBER 2019

Submitted by:

PennEast Pipeline Company, LLC

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TABLES

APPENDICES

Acronym List

ATON	Aid to Navigation
ATV	All-Terrain Vehicles
ATW	Approved Trout Waters
ATWS	additional temporary workspace
BMP	best management practice
BO	Biological Opinion
CFR	Code of Federal Regulations
CWF	Cold Water Fishes
Dbh	diameter at breast height
DRBC	Delaware River Basin Commission
EA Form	Environmental Assessment Form
EI	Environmental Inspector
E&SCP	Erosion and Sediment Control Plan
FERC	Federal Energy Regulatory Commission
FWCA	Fish and Wildlife Coordination Act
HDD	horizontal directional drill
ISMP	Invasive Species Management Plan
JPA	Joint Permit Application
MBTA	Migratory Bird Treaty Act
MP	milepost
NMFS	National Marine Fisheries Service
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PaGWIS	Pennsylvania Groundwater Information System
PEM	palustrine emergent
PennEast	PennEast Pipeline Company, LLC
PFBC	Pennsylvania Fish and Boat Commission
PFO	palustrine forested
PGC	Pennsylvania Game Commission
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
PNDI	Pennsylvania Natural Diversity Inventory
PNHP	Pennsylvania Natural Heritage Program
PPC	Preparedness, Prevention, and Contingency
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
Project	PennEast Pipeline Project
PSS	palustrine scrub-shrub
ROW	right-of-way
RQBTS	Recognized Qualified Bog Turtle Surveyor
SGL	State Game Land
STW	Stocked Trout Waters
T&E	threatened and endangered

TSF	Trout Stocking Fishery
USEPA	U.S. Environmental Protection Plan
USFWS	U.S. Fish and Wildlife Service
WTS	Wilderness Trout Streams
WTW	Wild Trout Waters
WWF	Warmwater Fishes

Module S3: Identification and Description of Potential Project Impacts

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) and the assessment criteria detailed in Module 3 of the Environmental Assessment Form (EA Form) Instructions (Document No. 3150-PM-BWEW0017, Revised 6/2017), PennEast Pipeline Company, LLC (PennEast) has provided herein a complete analysis and discussion of the anticipated impacts associated with development of the PennEast Pipeline Project (Project) in Carbon County, Pennsylvania. This document follows the sequence of the requirements presented in the EA Form Instructions Module S3 Section.

S3.A Summary of Proposed Impacts

S3.A.1 Total Proposed Permanent Direct Impacts

Permanent impacts are defined as those areas that are affected by a water obstruction or encroachment resulting from the placement or construction of the obstruction or encroachment as well as the area necessary for the operation and maintenance of the obstruction or encroachment. For the Project, permanent impacts would include the proposed pipeline and its 30-foot maintained right of way (ROW), a new permanent access road that will result in permanent fill within a floodway and a new culvert installed within a watercourse, two permanent culvert replacements, permanent fill in approximately 0.036 acres of PEM wetlands and 0.024 acres of PFO wetland mosaic to construct and operate the Kidder Compressor Station in Carbon County. Specifically within Carbon County, permanent impacts are limited to the pipeline and its 30-foot maintained ROW, fill within PEM and PFO mosaic wetlands at the Kidder Compressor Station, the installation of a new culvert associated with the Kidder Compressor Station, and the replacement of an existing culvert.

Permanent impacts are categorized as direct or indirect impacts. Direct impacts include filling, draining, or converting a resource to another type. For the Project, direct impacts include the installation of temporary equipment bridges and wetland mats, replacement of two existing culverts, the installation of a new permanent culvert, fill within one floodway, and fill within approximately 0.036 acres of PEM wetlands and 0.024 acres of PFO wetland mosaic to construct and operate the Kidder Compressor Station in Carbon County. Specifically within Carbon County, permanent impacts are limited to the pipeline and its 30-foot maintained ROW, permanent replacement of one existing culvert, installation of a new culvert, and permanent fill in PEM and PFO mosaic wetlands at the Kidder Compressor Station.

Therefore, within Carbon County, permanent direct impacts are limited to fill within PEM and PFO mosaic wetlands at the Kidder Compressor Station, the installation of a new culvert associated with the Kidder Compressor Station, and the in-kind replacement of one existing culvert along access road AR-034. The existing corrugated metal culvert on AR-034 is in disrepair and would not support the construction equipment that is necessary for Project construction. Therefore, PennEast proposes to replace the culvert in kind. The watercourse and floodway impacts associated with the culvert installation and replacement are provided in Table CA-L3-1. A Hydrology and Hydraulics Report that documents the

analysis that was conducted to size the new culvert is provided in Joint Permit Application (JPA) Section N.

Table CA-L3-1
Total Proposed Permanent Direct Impacts in Carbon County

Milepost	Resource ID[1]	Resource Type	Permanent Direct Impacts (acres)
PennEast Mainline Pipeline - Watercourse Impacts			
None			
Blue Mountain Lateral - Watercourse Impacts			
None			
Kidder Compressor Station - Watercourse Impacts			
26.6	082515_BT_1001_P_IM	Watercourse-channel and watercourse floodway	0.255
Access Roads - Watercourse Impacts			
25.1	012617_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.067
Total Watercourse Impacts			**0.322**
PennEast Mainline Pipeline - Wetland Impacts			
None			
Kidder Compressor Station - Wetland Impacts			
26.6	112414_JC_004_PEM	Wetland	0.022
26.6	112414_JC_004_MOSAIC[2]	Wetland	0.024
26.6	082515_BT_004_PEM	Wetland	0.005
26.7	082515_BT_003_PEM	Wetland	0.009
Total Wetland Impacts			**0.060**

Notes:

1. Watercourse ID: P = perennial, I = intermittent, E = ephemeral, MA = major, IN = intermediate, MI = minor, C = canal, D = ditch
2. 112414_JC_004_MOSAIC was identified to be a mosaic of 50% PFO and 50% upland area. Therefore 50% of the total delineated acreage is included for impact calculations.

S3.A.2 Total Proposed Temporary Direct Impacts

Temporary impacts are defined as those areas affected during the construction of a water obstruction or encroachment, but do not include areas that are required to operate and maintain the water obstruction or encroachment, which are considered permanent impacts as described in Section S3.A.1. For the Project, temporary impacts would include any workspace within a wetland, watercourse, or floodway that will be impacted during construction but is outside of the 30-foot maintained ROW. Temporary impacts include workspace for spoil storage, equipment bridges, wetland matting, and other pipeline construction staging activities.

As described in Section S3.A.1, direct impacts include filling, draining, or converting a resource to another type. For the Project, direct impacts include the installation of temporary equipment bridges and wetland mats, replacement of two existing culverts, the installation of a new permanent culvert, fill within one floodway, and fill within approximately 0.036 acres of PEM wetlands and 0.024 acres of PFO wetland mosaic to construct and operate the Kidder Compressor Station in Carbon County. Specifically within Carbon County, direct impacts are limited to temporary equipment bridges and wetland mats, as well as the permanent replacement of one existing culvert and the installation of a new culvert.

Therefore, within Carbon County, temporary direct impacts include the installation of temporary equipment bridges across watercourses and temporary mats within floodways and wetlands. PennEast anticipates using 16-foot wide timber mats of other comparable structures to construct temporary bridges and to mat wetlands. Table CA-L3-2 presents the approximate acreages of temporary direct impacts associated with these equipment crossings. These impacts may fall within the Project's 30-foot maintained ROW or the temporary workspace, including along access roads, which are accounted for within the permanent indirect and temporary indirect discussions in Sections S3.A.3 and S3.A.4 below. Therefore, the impacts presented in Table CA-L3-2 estimate the specific impacts for this activity, but they are not additive to the impact acreages present in Tables CA-L3-3 and CA-L3-4 in sections below.

Table CA-L3-2
Total Proposed Temporary Direct Impacts in Carbon County

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Direct Impacts (acres)[4]
PennEast Mainline Pipeline - Watercourse Impacts			
26.6	102114_JC_1001_P_MI	Watercourse-channel and watercourse floodway	0.019
30.4R2	042415_JC_1006_E_MI - 1	Watercourse-channel and watercourse floodway	0.033
30.5R2	042415_JC_1006_E_MI - 2	Watercourse-channel and watercourse floodway	0.07
31.2R2	042415_JC_1004_P_MI	Watercourse-channel and watercourse floodway	0.064
31.2R2	042415_JC_1002_P_IN - 1	Watercourse-channel and watercourse floodway	0.008
31.2R2	042415_JC_1002_P_IN - 2	Watercourse-channel and watercourse floodway	0.018
31.2R2	042415_JC_1005_D_MI	Watercourse-channel and watercourse floodway	0.014
32.8R3	110316_GM_1003_I_MI	Watercourse-channel and watercourse floodway	0.028
32.9R3	110316_GM_1004_I_MI	Watercourse-channel and watercourse floodway	0.02
33.2R3	042115_JC_1001_P_IN	Watercourse-channel and watercourse floodway	0.017
33.2R3	042115_JC_1002_P_MI	Watercourse-channel and	0.011

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Direct Impacts (acres)[4]
		watercourse floodway	
33.4R3	042115_JC_1004_I_MI	Watercourse-channel and watercourse floodway	0.036
33.5R3	042115_JC_1005_E_MI	Watercourse-channel and watercourse floodway	0.018
34.7R2	042315_JC_1001_I_MI	Watercourse-channel and watercourse floodway	0.01
34.7R2	042315_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.026
34.8R3	042315_JC_1003_P_IN	Watercourse-channel and watercourse floodway	0.019
34.8R3	042315_JC_1003_I_IN	Watercourse-channel and watercourse floodway	0.022
36.1	060117_MB_1001_P_MI	Watercourse-channel and watercourse floodway	0.022
37.5	061615_DB_1001_I_MI	Watercourse-channel and watercourse floodway	0.018
38.3	061615_DB_1002_P_IN	Watercourse-channel and watercourse floodway	0.019
41	040517_BT_1001_E_MI	Watercourse-channel and watercourse floodway	0.006
41.1	091516_GM_1002_E_MI	Watercourse-channel and watercourse floodway	0.018
41.2	012717_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.019
41.2	012717_GM_1003_P_MI	Watercourse-channel and watercourse floodway	0.02
41.3	020117_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.025
41.6	020117_GM_1001_P_MI	Watercourse-channel and watercourse floodway	0.017
44.8R2	041018_WA_1000_P_MI	Watercourse-channel and watercourse floodway	0.017
45R2	051115_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.017
45.6	051115_JC_1001_P_MI	Watercourse-channel and watercourse floodway	0.026
46.3	041018_WA_1003_I_MI	Watercourse-channel and watercourse floodway	0.006
48.1	090914_WA_1000_P_IM	Watercourse-channel and watercourse floodway	0.017
50.6R3	072618_WA_1010_I_MI	Watercourse-channel and	0.006

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Direct Impacts (acres)[4]
		watercourse floodway	
50.6R3	072618_WA_1009_I_MI	Watercourse-channel and watercourse floodway	0.017
50.6R3	072618_WA_1007_I_MI	Watercourse-channel and watercourse floodway	0.020
50.7R3	072618_WA_1005_I_MI	Watercourse-channel and watercourse floodway	0.005
50.7R3	072618_WA_1004_I_MI	Watercourse-channel and watercourse floodway	0.02
50.7R3	072618_WA_1003_I_MI	Watercourse-channel and watercourse floodway	0.006
50.7R3	072618_WA_1001_P_MI	Watercourse-channel and watercourse floodway	0.017
Blue Mountain Lateral - Watercourse Impacts			
0.5R3	041017_GM_1001_P_IN	Watercourse-channel and watercourse floodway	0.007
0.5R3	041017_GM_1001_P_MI	Watercourse-channel and watercourse floodway	0.015
0.51R3	041117_GM_1002_E_MI	Watercourse-channel and watercourse floodway	0.007
Kidder Compressor Station - Watercourse Impacts			
None			
Access Roads - Watercourse Impacts			
24.4	063017_GM_1001_I_MI	Watercourse-channel and watercourse floodway	0.013
Total Watercourse Impacts			**0.813**
PennEast Mainline Pipeline - Wetland Impacts			
24.2	110614_JC_004_PSS - 1	Wetland	0.071
24.3	110614_JC_004_PSS - 2	Wetland	0.016
24.3	082219_MU_1006_PEM	Wetland	0.012
24.5	110614_JC_002B_PFO	Wetland	0.010
26.4	102114_JC_001B_PFO	Wetland	0.014
26.4	102114_JC_001_PEM - 1	Wetland	0.033
26.5	102114_JC_001_PEM - 2	Wetland	0.251
26.7	102114_JC_001_PEM - 3	Wetland	0.167
26.7	102114_JC_001A_PSS - 1	Wetland	0.068
26.9R2	102114_JC_001A_PSS - 3	Wetland	0.004
29.6R2	042415_JC_1005_PEM	Wetland	0.393

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Direct Impacts (acres)[4]
29.6R2	050115_JC_1001_PFO	Wetland	0.328
30.4R2	042415_JC_1003_PSS	Wetland	0.041
31.1R2	042415_JC_1002_PEM	Wetland	0.529
31R2	042415_JC_1001_PFO	Wetland	0.602
32.6R3	110316_GM_1001_PFO	Wetland	0.032
32.5R2	110316_GM_1001_PEM - 1	Wetland	0.020
32.7R3	110316_GM_1001_PEM - 2	Wetland	0.052
32.8R3	110316_GM_1001_PEM - 3	Wetland	0.043
33.6R3	042115_JC_1003_PFO	Wetland	0.123
34.7R2	042315_JC_1002_PEM	Wetland	0.262
34.7R2	042315_JC_1001_PFO - 1	Wetland	0.343
34.8R3	042315_JC_1001_PFO - 2	Wetland	0.046
35.4	042315_JC_1004_PFO	Wetland	0.026
35.5	010716_GM_1001_VP	Wetland	0.017
35.9	060117_MB_1001_PFO - 1	Wetland	0.040
36	060117_MB_1001_PFO - 2	Wetland	0.118
36	060117_MB_1001_PEM	Wetland	0.066
36.1	060217_MB_1001_PEM	Wetland	0.028
36.1	060217_MB_1001_PFO	Wetland	0.089
36.5R3	050615_JC_1001_PFO - 1	Wetland	0.029
36.6R3	050615_JC_1001_PFO - 2	Wetland	0.397
37.1R3	061615_DB_1002_PFO	Wetland	0.126
37.5	061615_DB_1001_PEM	Wetland	0.019
41.2	020117_GM_1006_PFO	Wetland	0.051
41.5	020117_GM_1001_PUB	Wetland	0.023
44.8R2	041018_WA_002_PSS	Wetland	0.010
45R2	052915_JC_1001_PEM	Wetland	0.015
45.6	051115_JC_1001_PEM	Wetland	0.024
48.1	090914_WA_001_PSS	Wetland	0.024
48.1	090914_WA_002_PSS	Wetland	0.007
50.6R3	072618_WA_001_PEM	Wetland	0.049
50.6R4	072618_WA_002_PEM	Wetland	0.006
Kidder Compressor Station - Wetland Impacts			
26.8R2	102114_JC_001A_PSS - 2	Wetland	0.019
Total Wetland Impacts			**4.643**

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Direct Impacts (acres)[4]

Notes:
1. All route deviations implemented after the FERC Certificate Application are denoted with an "R" and indicate a MP equation. MPs with an "R1" indicate route deviations implemented and provided to FERC prior to the issuance of the DEIS. MPs with an "R2" indicate route deviations implemented as part of the September 2016 Route Update. MPs with an "R3 indicate route deviations implemented post-FERC Certificate issuance. All MPs without an "R" indicate that the route has not changed since the Certificate Application.
2. In instances where a wetland is crossed by the proposed pipeline or workspace multiple times, crossing numbers (e.g. "-1", "-2") have been added to the Wetland ID.
3. Watercourse ID: P = perennial, I = intermittent, E = ephemeral, MA = major, IN = intermediate, MI = minor, C = canal, D = ditch
Wetland ID Key: PEM = palustrine emergent, PFO = palustrine forested, PSS = palustrine scrub shrub
4. A value of 0.00 denoted impact acreages less than 0.005 acres

S3.A.3 Total Proposed Permanent Indirect Impacts

As discussed in Section S3.A.1, permanent impacts are defined as those areas that are affected by a water obstruction or encroachment resulting from the placement or construction of the obstruction or encroachment as well as the area necessary for the operation and maintenance of the obstruction or encroachment. For the Project, direct impacts include the installation of temporary equipment bridges and wetland mats, replacement of two existing culverts, the installation of a new permanent culvert, fill within one floodway, and fill within approximately 0.036 acres of PEM wetlands and 0.024 acres of PFO wetland mosaic to construct and operate the Kidder Compressor Station in Carbon County. Specifically within Carbon County, permanent impacts are limited to the pipeline and its 30-foot maintained ROW, permanent replacement of one existing culvert, installation of a new culvert, and permanent fill in PEM and PFO mosaic wetlands at the Kidder Compressor Station.

Indirect impacts consist of altering the chemical, physical, or biological components of an aquatic resource that result in a functional change of the resource. The construction workspace within wetlands, watercourses, and floodways that is needed to construct the Project is considered an indirect impact. The area within the permanent ROW necessary to operate and maintain the Project is also an indirect impact.

Within Carbon County, the permanent indirect impacts are limited to the acreage of wetlands, watercourses, and floodways within the 30-foot maintained ROW. These impacts are presented in Table CA-L3-3.

Table CA-L3-3
Total Proposed Permanent Indirect Impacts in Carbon County

Milepost[1]	Resource ID[2,3]	Resource Type	Permanent Indirect Impacts (acres)[4]
PennEast Mainline Pipeline - Watercourse Impacts			
26.6	102114_JC_1001_P_MI	Watercourse-channel and watercourse floodway	0.083

Milepost[1]	Resource ID[2,3]	Resource Type	Permanent Indirect Impacts (acres)[4]
30.4R2	042415_JC_1006_E_MI - 1	Watercourse-channel and watercourse floodway	0.576
30.5R2	042415_JC_1006_E_MI - 2	Watercourse-channel and watercourse floodway	0.009
31.2R2	042415_JC_1004_P_MI	Watercourse-channel and watercourse floodway	0.010
31.2R2	042415_JC_1002_P_IN - 1	Watercourse-channel and watercourse floodway	0.005
31.2R2	042415_JC_1002_P_IN - 2	Watercourse-channel and watercourse floodway	0.011
32.8R3	110316_GM_1003_I_MI	Watercourse-channel and watercourse floodway	0.12
32.9R3	110316_GM_1004_I_MI	Watercourse-channel and watercourse floodway	0.078
33.2R3	042115_JC_1001_P_IN	Watercourse-channel and watercourse floodway	0.073
33.2R3	042115_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.052
33.4R3	042115_JC_1003_E_MI	Watercourse floodway	0.132
33.4R3	042115_JC_1004_I_MI	Watercourse-channel and watercourse floodway	0.478
33.5R3	042115_JC_1005_E_MI	Watercourse-channel and watercourse floodway	0.001
34.7R2	042315_JC_1001_I_MI	Watercourse-channel and watercourse floodway	0.015
34.7R2	042315_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.035
34.8R3	042315_JC_1003_P_IN	Watercourse-channel and watercourse floodway	0.052
34.8R3	042315_JC_1003_I_IN	Watercourse-channel and watercourse floodway	0.243
36.1	060117_MB_1001_P_MI	Watercourse-channel and watercourse floodway	0.076
36.5R3	050615_JC_1002_I_MI	Watercourse floodway	0.044
36.6R3	010816_DB_1001_I_MI	Watercourse floodway	0.012
37.5	061615_DB_1001_I_MI	Watercourse-channel and watercourse floodway	0.087
38.3	061615_DB_1002_P_IN	Watercourse-channel and watercourse floodway	0.078
41	040517_BT_1001_E_MI	Watercourse-channel and watercourse floodway	0.071

Milepost[1]	Resource ID[2,3]	Resource Type	Permanent Indirect Impacts (acres)[4]
41.1	091516_GM_1002_E_MI	Watercourse-channel and watercourse floodway	0.076
41.2	012717_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.057
41.2	012717_GM_1003_P_MI	Watercourse-channel and watercourse floodway	0.107
41.3	020117_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.100
41.6	020117_GM_1001_P_MI	Watercourse-channel and watercourse floodway	0.079
44.2R3	061715_DB_1001_I_MI	Watercourse-channel and watercourse floodway	0.009
44.3R3	122215_DB_1001_P_MI	Watercourse-channel and watercourse floodway	0.009
44.8R2	041018_WA_1000_P_MI	Watercourse-channel and watercourse floodway	0.074
45R2	051115_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.050
45.6	051115_JC_1001_P_MI	Watercourse-channel and watercourse floodway	0.072
46.1	041018_WA_1002_I_MI	Watercourse floodway	0.005
46.3	041018_WA_1003_I_MI	Watercourse-channel and watercourse floodway	0.071
48.1	090914_WA_1000_P_IM	Watercourse-channel and watercourse floodway	0.101
49.3R3	041217_GM_1001_P_IN	Watercourse-channel and watercourse floodway	0.002
50.6R3	072618_WA_1010_I_MI	Watercourse-channel and watercourse floodway	0.028
50.6R3	072618_WA_1009_I_MI	Watercourse-channel and watercourse floodway	0.028
50.6R3	072618_WA_1007_I_MI	Watercourse-channel and watercourse floodway	0.078
50.6R3	072618_WA_1008_I_MI	Watercourse floodway	0.040
50.7R3	072618_WA_1005_I_MI	Watercourse-channel and watercourse floodway	0.019
50.7R3	072618_WA_1004_I_MI	Watercourse-channel and watercourse floodway	0.045
50.7R3	072618_WA_1003_I_MI	Watercourse-channel and watercourse floodway	0.001
50.7R3	072618_WA_1001_P_MI	Watercourse-channel and	0.073

Milepost[1]	Resource ID[2,3]	Resource Type	Permanent Indirect Impacts (acres)[4]
		watercourse floodway	
50.7R3	072618_WA_1006_I_MI	Watercourse floodway	0.006
50.7R3	072618_WA_1002_I_MI	Watercourse floodway	0.005
Blue Mountain Lateral - Watercourse Impacts			
0.5R3	041017_GM_1001_P_IN	Watercourse-channel and watercourse floodway	0.074
0.5R3	041017_GM_1001_P_MI	Watercourse-channel and watercourse floodway	0.001
0.51R3	041117_GM_1002_E_MI	Watercourse-channel and watercourse floodway	0.003
Kidder Compressor Station - Watercourse Impacts			
26.6	082515_BT_1001_P_IM	Watercourse-channel and watercourse floodway	0.290
Access Roads - Watercourse Impacts			
25.1	012617_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.079
Total Watercourse Impacts			**3.923**
PennEast Mainline Pipeline - Wetland Impacts			
26.4	102114_JC_001B_PFO	Wetland	0.018
26.5	102114_JC_001_PEM - 2	Wetland	0.090
26.7	102114_JC_001_PEM - 3	Wetland	0.037
26.9R2	102114_JC_001_PEM - 5	Wetland	0.002
27R2	102314_JC_004_PEM	Wetland	0.013
27.1R2	102314_JC_002_PFO - 1	Wetland	0.001
27.1R2	102314_JC_002_PFO - 2	Wetland	0.005
27.1R2	102314_JC_002_PSS	Wetland	0.099
29.6R2	042415_JC_1005_PEM	Wetland	0.087
29.6R2	050115_JC_1001_PFO	Wetland	0.519
30.4R2	042415_JC_1003_PSS	Wetland	0.053
31.1R2	042415_JC_1002_PEM	Wetland	0.151
31R2	042415_JC_1001_PFO	Wetland	0.995
32.6R3	110316_GM_1001_PFO	Wetland	0.012
32.5R2	110316_GM_1001_PEM - 1	Wetland	0.037
32.8R3	110316_GM_1001_PEM - 3	Wetland	0.033
33.6R3	042115_JC_1003_PFO	Wetland	0.014
34.7R2	042315_JC_1002_PEM	Wetland	0.014

Milepost[1]	Resource ID[2,3]	Resource Type	Permanent Indirect Impacts (acres)[4]
34.7R2	042315_JC_1001_PFO - 1	Wetland	0.646
34.8R3	042315_JC_1001_PFO - 2	Wetland	0.018
35.4	042315_JC_1004_PFO	Wetland	0.013
35.5	010716_GM_1001_VP	Wetland	0.002
35.9	060117_MB_1001_PFO - 1	Wetland	0.004
36	060117_MB_1001_PFO - 2	Wetland	0.183
36.1	060217_MB_1001_PFO	Wetland	0.156
36.5R3	050615_JC_1001_PFO - 1	Wetland	0.023
36.6R3	050615_JC_1001_PFO - 2	Wetland	0.747
37.1R3	061615_DB_1002_PFO	Wetland	0.235
41.2	020117_GM_1006_PFO	Wetland	0.050
41.5	020117_GM_1001_PUB	Wetland	0.028
44.8R2	041018_WA_002_PSS	Wetland	0.006
45R2	052915_JC_1001_PEM	Wetland	0.021
45.6	051115_JC_1001_PEM	Wetland	0.037
48.1	090914_WA_001_PSS	Wetland	0.036
48.1	090914_WA_002_PSS	Wetland	0.013
49.3R3	041117_GM_1001_PFO	Wetland	0.010
49.3R3	041117_GM_1001_PSS	Wetland	0.008
50.6R3	072618_WA_001_PEM	Wetland	0.045
Kidder Compressor Station - Wetland Impacts			
26.6	112414_JC_004_PEM	Wetland	0.022
26.6	112414_JC_004_MOSAIC[5]	Wetland	0.024
26.6	082515_BT_004_PEM	Wetland	0.005
26.7	082515_BT_003_PEM	Wetland	0.009
26.7	112414_JC_004_PFO - 1	Wetland	0.083
26.7	112414_JC_004_PFO - 2	Wetland	0.005
26.8R2	102114_JC_001A_PSS - 2	Wetland	0.001
26.8R2	102114_JC_001_PEM - 4	Wetland	0.006
26.8R2	102114_JC_001_PFO	Wetland	0.084
Total Wetland Impacts			**4.700**

Milepost[1]	Resource ID[2,3]	Resource Type	Permanent Indirect Impacts (acres)[4]

Notes:
1. All route deviations implemented after the FERC Certificate Application are denoted with an "R" and indicate a MP equation. MPs with an "R1" indicate route deviations implemented and provided to FERC prior to the issuance of the DEIS. MPs with an "R2" indicate route deviations implemented as part of the September 2016 Route Update. MPs with an "R3 indicate route deviations implemented post-FERC Certificate issuance. All MPs without an "R" indicate that the route has not changed since the Certificate Application.
2. In instances where a wetland is crossed by the proposed pipeline or workspace multiple times, crossing numbers (e.g. "-1", "-2") have been added to the Wetland ID.
3. Watercourse ID: P = perennial, I = intermittent, E = ephemeral, MA = major, IN = intermediate, MI = minor, C = canal, D = ditch
Wetland ID Key: PEM = palustrine emergent, PFO = palustrine forested, PSS = palustrine scrub shrub
4. A value of 0.00 denoted impact acreages less than 0.005 acres
5. 112414_JC_004_MOSAIC was identified to be a mosaic of 50% PFO and 50% upland area. Therefore 50% of the total delineated acreage is included for impact calculations.

S3.A.4 Total Proposed Temporary Indirect Impacts

As discussed in Section S3.A.2, temporary impacts are defined as those areas affected during the construction of a water obstruction or encroachment, but do not include areas that are required to operate and maintain the water obstruction or encroachment. For the Project, temporary impacts would include any workspace within a wetland, watercourse, or floodway that will be impacted during construction but is outside of the 30-foot maintained ROW. Temporary impacts include workspace for spoil storage, equipment bridges, wetland matting, and other pipeline construction staging activities.

Indirect impacts consist of altering the chemical, physical, or biological components of an aquatic resource that result in a functional change of the resource. The construction workspace within wetlands, watercourses, and floodways that is needed to construction the Project is considered an indirect impact. The area within the permanent ROW necessary to operate and maintain the Project is also an indirect impact.

Within Carbon County, the temporary indirect impacts include the acreage of wetlands, watercourses, and floodways within the construction workspace that are outside of the 30-foot maintained ROW. These impacts are presented in Table CA-L3-4.

Table CA-L3-4
Total Proposed Temporary Indirect Impacts in Carbon County

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Indirect Impacts (acres)[4]
PennEast Mainline Pipeline - Watercourse Impacts			
24.5	110415_GM_1001_I_MI	Watercourse floodway	0.031
26.5	102114_JC_1003_E_MI	Watercourse floodway	0.033

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Indirect Impacts (acres)[4]
26.6	102114_JC_1001_P_MI	Watercourse-channel and watercourse floodway	0.106
30.4R2	042415_JC_1006_E_MI - 1	Watercourse-channel and watercourse floodway	0.402
30.5R2	042415_JC_1006_E_MI - 2	Watercourse-channel and watercourse floodway	0.016
31.2R2	042415_JC_1004_P_MI	Watercourse-channel and watercourse floodway	0.042
31.2R2	042415_JC_1002_P_IN - 1	Watercourse-channel and watercourse floodway	0.013
31.2R2	042415_JC_1002_P_IN - 2	Watercourse-channel and watercourse floodway	0.018
31.2R2	042415_JC_1005_D_MI	Watercourse-channel and watercourse floodway	0.003
32.7R3	110316_GM_1001_I_MI	Watercourse floodway	0.013
32.8R3	110316_GM_1003_I_MI	Watercourse-channel and watercourse floodway	0.222
32.9R3	110316_GM_1004_I_MI	Watercourse-channel and watercourse floodway	0.171
33.2R3	042115_JC_1001_P_IN	Watercourse-channel and watercourse floodway	0.105
33.2R3	042115_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.051
33.4R3	042115_JC_1003_E_MI	Watercourse floodway	0.028
33.4R3	042115_JC_1004_I_MI	Watercourse-channel and watercourse floodway	0.331
33.5R3	042115_JC_1005_E_MI	Watercourse-channel and watercourse floodway	0.041
33.7R3	042115_JC_1006_I_MI	Watercourse floodway	0.002
34.7R2	042315_JC_1001_I_MI	Watercourse-channel and watercourse floodway	0.013
34.7R2	042315_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.045
34.8R3	042315_JC_1003_P_IN	Watercourse-channel and watercourse floodway	0.070
34.8R3	042315_JC_1003_I_IN	Watercourse-channel and watercourse floodway	0.175
36.1	060117_MB_1001_P_MI	Watercourse-channel and watercourse floodway	0.114
36.5R3	050615_JC_1002_I_MI	Watercourse floodway	0.022

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Indirect Impacts (acres)[4]
36.6R3	010816_DB_1001_I_MI	Watercourse floodway	0.009
37.5	061615_DB_1001_I_MI	Watercourse-channel and watercourse floodway	0.125
38.3	061615_DB_1002_P_IN	Watercourse-channel and watercourse floodway	0.124
41	040517_BT_1001_E_MI	Watercourse-channel and watercourse floodway	0.060
41.1	091516_GM_1002_E_MI	Watercourse-channel and watercourse floodway	0.119
41.2	012717_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.081
41.2	012717_GM_1003_P_MI	Watercourse-channel and watercourse floodway	0.155
41.3	020117_GM_1002_P_MI	Watercourse-channel and watercourse floodway	0.137
41.6	020117_GM_1001_P_MI	Watercourse-channel and watercourse floodway	0.119
44.8R2	041018_WA_1000_P_MI	Watercourse-channel and watercourse floodway	0.276
45R2	051115_JC_1002_P_MI	Watercourse-channel and watercourse floodway	0.078
45.6	051115_JC_1001_P_MI	Watercourse-channel and watercourse floodway	0.118
46.1	041018_WA_1002_I_MI	Watercourse floodway	0.036
46.3	041018_WA_1003_I_MI	Watercourse-channel and watercourse floodway	0.058
48.1	090914_WA_1000_P_IM	Watercourse-channel and watercourse floodway	0.164
50.6R3	072618_WA_1010_I_MI	Watercourse-channel and watercourse floodway	0.024
50.6R3	072618_WA_1009_I_MI	Watercourse-channel and watercourse floodway	0.030
50.6R3	072618_WA_1007_I_MI	Watercourse-channel and watercourse floodway	0.124
50.6R3	072618_WA_1008_I_MI	Watercourse floodway	0.081
50.7R3	072618_WA_1005_I_MI	Watercourse-channel and watercourse floodway	0.057
50.7R3	072618_WA_1004_I_MI	Watercourse-channel and watercourse floodway	0.041
50.7R3	072618_WA_1001_P_MI	Watercourse-channel and	0.111

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Indirect Impacts (acres)[4]
		watercourse floodway	
50.7R3	072618_WA_1006_I_MI	Watercourse floodway	0.039
50.7R3	072618_WA_1002_I_MI	Watercourse floodway	0.008
Blue Mountain Lateral - Watercourse Impacts			
0.5R3	041017_GM_1001_P_IN	Watercourse-channel and watercourse floodway	0.169
0.5R3	041017_GM_1001_P_MI	Watercourse-channel and watercourse floodway	0.003
0.51R3	041117_GM_1002_E_MI	Watercourse-channel and watercourse floodway	0.048
Kidder Compressor Station - Watercourse Impacts			
None			
Access Roads - Watercourse Impacts			
24.4	063017_GM_1001_I_MI	Watercourse-channel and watercourse floodway	0.077
Total Watercourse Impacts			**4.538**
PennEast Mainline Pipeline - Wetland Impacts			
24.2	110614_JC_004_PSS - 1	Wetland	0.083
24.3	110614_JC_004_PSS - 2	Wetland	0.015
24.3	082219_MU_1006_PEM	Wetland	0.004
24.5	110614_JC_002B_PFO	Wetland	0.008
26.4	102114_JC_001B_PFO	Wetland	0.014
26.4	102114_JC_001_PEM - 1	Wetland	0.017
26.5	102114_JC_001_PEM - 2	Wetland	0.222
26.7	102114_JC_001_PEM - 3	Wetland	0.146
26.7	102114_JC_001A_PSS - 1	Wetland	0.013
26.9R2	102114_JC_001A_PSS - 3	Wetland	0.008
29.6R2	042415_JC_1005_PEM	Wetland	0.109
29.6R2	050115_JC_1001_PFO	Wetland	0.805
30.4R2	042415_JC_1003_PSS	Wetland	0.013
31.1R2	042415_JC_1002_PEM	Wetland	0.152
31R2	042415_JC_1001_PFO	Wetland	1.499
32.6R3	110316_GM_1001_PFO	Wetland	0.025
32.5R2	110316_GM_1001_PEM - 1	Wetland	0.046
32.7R3	110316_GM_1001_PEM - 2	Wetland	0.003

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Indirect Impacts (acres)[4]
32.8R3	110316_GM_1001_PEM - 3	Wetland	0.032
33.6R3	042115_JC_1003_PFO	Wetland	0.259
34.7R2	042315_JC_1002_PEM	Wetland	0.107
34.7R2	042315_JC_1001_PFO - 1	Wetland	0.830
34.8R3	042315_JC_1001_PFO - 2	Wetland	0.067
35.4	042315_JC_1004_PFO	Wetland	0.028
35.5	010716_GM_1001_VP	Wetland	0.011
35.9	060117_MB_1001_PFO - 1	Wetland	0.058
36	060117_MB_1001_PFO - 2	Wetland	0.279
36	060117_MB_1001_PEM	Wetland	0.014
36.1	060217_MB_1001_PEM	Wetland	0.005
36.1	060217_MB_1001_PFO	Wetland	0.233
36.5R3	050615_JC_1001_PFO - 1	Wetland	0.059
36.6R3	050615_JC_1001_PFO - 2	Wetland	1.080
37.1R3	061615_DB_1002_PFO	Wetland	0.347
37.5	061615_DB_1001_PEM	Wetland	0.011
41.2	020117_GM_1006_PFO	Wetland	0.066
41.5	020117_GM_1001_PUB	Wetland	0.047
44.8R2	041018_WA_002_PSS	Wetland	0.008
45R2	052915_JC_1001_PEM	Wetland	0.039
45.6	051115_JC_1001_PEM	Wetland	0.034
48.1	090914_WA_001_PSS	Wetland	0.024
48.1	090914_WA_002_PSS	Wetland	0.011
50.6R3	072618_WA_001_PEM	Wetland	0.087
50.6R4	072618_WA_002_PEM	Wetland	0.001
Kidder Compressor Station - Wetland Impacts			
26.8R2	102114_JC_001A_PSS - 2	Wetland	0.068
Total Wetland Impacts			**6.987**

Milepost[1]	Resource ID[2,3]	Resource Type	Temporary Indirect Impacts (acres)[4]

Notes:
1. All route deviations implemented after the FERC Certificate Application are denoted with an "R" and indicate a MP equation. MPs with an "R1" indicate route deviations implemented and provided to FERC prior to the issuance of the DEIS. MPs with an "R2" indicate route deviations implemented as part of the September 2016 Route Update. MPs with an "R3 indicate route deviations implemented post-FERC Certificate issuance. All MPs without an "R" indicate that the route has not changed since the Certificate Application.
2. In instances where a wetland is crossed by the proposed pipeline or workspace multiple times, crossing numbers (e.g. "-1", "-2") have been added to the Wetland ID.
3. Watercourse ID: P = perennial, I = intermittent, E = ephemeral, MA = major, IN = intermediate, MI = minor, C = canal, D = ditch
Wetland ID Key: PEM = palustrine emergent, PFO = palustrine forested, PSS = palustrine scrub shrub
4. A value of 0.00 denoted impact acreages less than 0.005 acres

S3.B Standard Information Responses

S3.B.1(i) National, State or Local Park, Forest or Recreation Areas

Within Carbon County, the proposed Project will result in the crossing of two federally-owned recreation areas, two state parks, a state forest, and three State Game Lands (SGLs) as detailed in Table CA-L3-5. These areas were identified by reviewing publicly available websites and databases of federal, state, and local agencies; public websites; and other sources of publicly available information. Additional information was obtained for these areas through consultations with the relevant federal, state, or local agencies; reviewing aerial photographs and maps of the Project area; a title search of lands crossed by the Project facilities, and through field surveys conducted from 2014 to 2019.

Federal Lands

Federally-owned properties crossed by the PennEast pipeline in Carbon County include the crossing of the Francis E. Walter Dam and Beltzville State Park (the Commonwealth of Pennsylvania leases this land from the USACE making this a Federal Land).

Francis E. Walter Dam

Federally managed properties crossed by the Project in Carbon County include the crossing of a reservoir and recreational area associated with the Francis E. Walter Reservoir between mileposts (MPs) 23.0 and 23.1 for an approximate crossing length of 0.1 miles where the Project intersects the Lehigh River. In Carbon County, approximately 0.7 acres of lands associated with the Francis E. Walter Reservoir will be affected by the construction of the Project and 0.3 acres will be located in the permanent ROW. The primary purpose of the F.E. Walter Dam is flood control, and recreation is a secondary mission; whitewater and fishery releases are planned every year (US Army Corps of Engineers [USACE], 2017). All facilities are operated and maintained by the USACE. Public use areas include two boat launches, four picnic areas, one disc golf course, and many other improved and managed areas for public recreation. An extensive recreational and fisheries program is also in place at the Francis E. Walter Reservoir area.

Recreation along the reservoir is typical of that which is available along any major waterway including fishing and boating. There are no roads leading to the area where the Project crosses the reservoir. The Lehigh River, at this location, is not used by beach goers, and there are no boat launches in the immediate vicinity of the proposed crossing. The crossing location was chosen such that it is situated farther than 2 miles from the dam itself, and away from recreational access points and facilities, such as boat launches.

Pursuant to Section 14 of the Rivers and Harbors Act and codified in U.S. Code Title 33 Section 408, PennEast has consulted with the USACE regarding the proposed modifications to the Francis E. Walter Reservoir and is seeking Section 408 approval. Consultation with the USACE regarding the Section 408 approval was initiated in October 2014. Coordination continued for several months and included a pre-application meeting in 2015 and the submission of a Section 408 application and an Application for Transportation and Utility Systems and Facilities on Federal Land in February 2016. The USACE issued a public notice in April 2016 that informed the public of PennEast's application. In April 2017, PennEast submitted an applicant-prepared EA for the Francis E. Walter Reservoir crossing, which the USACE published in June 2017. On November 27, 2018, the USACE issued its Section 408 approval and a Finding of No Significant Impact.

The portion of the Project that crosses lands associated with the Francis E. Walter Reservoir is co-located within an existing product pipeline easement owned by Buckeye Partners, LP, minimizing permanent impacts to forested areas, which are important wildlife and recreation resources. As outlined in PennEast's application and in the USACE's EA, PennEast proposes a dry, open-cut crossing of the Frances E. Walter Reservoir (Lehigh River). Due to steep slopes, using a trenchless crossing method is not an option at the proposed crossing location. To find an alternative crossing where trenchless methods could be utilized, the Project would have to deviate substantially from the Buckeye ROW with which PennEast has co-located, thereby increasing forested impacts. PennEast proposes to cross the Lehigh River when the pool elevation is low. The USACE recommended constructing between late-October and February when the water level is typically the lowest. The river will be narrower and shallower, which will allow PennEast to construct the crossing within 48 hours. Recreational impacts associated with fishing and boating will be minimized by constructing during low-flow conditions in late fall or during the winter. PennEast will coordinate with the Pennsylvania Fish and Boat Commission (PFBC) regarding additional best management practices (BMPs) that should be utilized for instream construction during this timeframe, when wild trout are typically spawning.

Beltzville State Park

Beltzville State Park is a 3,002-acre park located at the foothills of the Pocono Mountains. The park is situated around the 949-acre Beltzville Lake and hosts 15 miles of hiking trails, 2.5 miles of mountain biking trails, and is open to a range of recreational activities including swimming, boating, fishing, hunting, cross country-skiing, and water-skiing. Beltzville State Park and portions of Beltzville Lake will be crossed by the Project between MPs 43.1R3 and 44.1R3 for an approximate crossing length of 1.1 miles in Carbon County, Pennsylvania. Approximately 3.1 acres of lands associated with Beltzville State Park will be affected by the construction of the Project and 6.4 acres will be located in the permanent ROW. Beltzville State Park is a cooperative effort of the USACE, Pennsylvania Department of Conservation and Natural Resources (PADCNR), and Pennsylvania Game Commission (PGC); the Project will cross land owned by the United States. The USACE operates and maintains the dam while

recreation is managed by PADCNR under a lease agreement with the Pennsylvania Bureau of State Parks (USACE 2014b). The location of the crossing was chosen such that it is situated on the east side of the park away from recreational facilities, such as beach houses and food concession areas

Pursuant to Section 14 of the Rivers and Harbors Act and codified in U.S. Code Title 33 Section 408, PennEast has consulted with the USACE regarding the proposed modifications to Beltzville Lake and is seeking Section 408 approval. Consultation with the USACE regarding the Section 408 approval was initiated in October 2014. Coordination continued for several months and included a pre-application meeting in 2015 and the submission of a Section 408 application and an Application for Transportation and Utility Systems and Facilities on Federal Land in February 2016. The USACE issued a public notice in April 2016 that informed the public of PennEast's application. In April 2017, PennEast submitted an applicant-prepared EA for the Beltzville Lake crossing, which the USACE published in June 2017. On November 27, 2018, the USACE issued its Section 408 approval and a Finding of No Significant Impact. PennEast continues to work with the USACE Office of Real Estate to finalize the license agreement.

The Project would cross Beltzville State Park and the associated Beltzville Lake for a total length of approximately 1.1 miles. Construction of the Project through Beltzville State Park would include an approximate 0.1-mile conventional trench through an upland field between MP 43.1 and 43.2. An approximate 1.14-mile long [6,000-feet in horizontal length] horizontal directional drill (HDD) would span from a 3.05-acre additional temporary workspace (ATWS) located in the upland field (characterized as agricultural land), under Beltzville State Park and Beltzville Lake, until exiting USACE property to the southeast. Of the total HDD crossing length, approximately 1.0 mile would span underneath USACE property at Beltzville Lake. HDD technologies would be employed to avoid impacts to sensitive resources including wetlands, watercourses, surrounding forested uplands, and recreational areas.

Using HDD technology will significantly reduce impacts to recreation at Beltzville Lake and the surrounding state park. To install the pipeline via a combination of conventional trenching and HDD, open land within Beltzville State Park will be temporarily impacted, which would restrict park visitor access in this area during construction to address safety concerns. Once in operation, minor hand clearing will be conducted in areas crossed by HDD to maintain a clear line of sight between pipeline markers. There will be no mechanized clearing, vegetation spraying, or earth disturbance in areas crossed by HDD.

In addition, based on input provided by PADCNR and USACE, PennEast will further mitigate recreational impacts associated with the Beltzville Proposed Action by contributing to an established mitigation fund, which will be utilized for a bridge repair within Beltzville State Park. The bridge is located along Old Mill Road where it crosses Sawmill Run. This bridge was identified by PADCNR and USACE as needing repair to improve safe access for the public's use of the various recreational opportunities at Beltzville State Park. PennEast will contribute to a mitigation fund managed by PADCNR to accomplish the objective of repairing this bridge.

State Lands

Management of state parks in Pennsylvania is implemented by the PADCNR, state forests are managed by the Bureau of Forestry, which is a subdivision of PADCNR, and SGLs are managed by the PGC. PennEast met with representatives from the PADCNR on November 4, 2014 to discuss surveys on state

managed lands and the process for obtaining ROW agreements to cross state parks, forests, and game lands. A discussion on the state lands crossed by the Project in Carbon County is provided below, and summary information including details on the location of the crossings by MP, length of crossings, and summaries of land affected by construction and operation of the Project facilities are included in Table CA-L3-5 below.

PennEast submitted a formal request for ROW on December 9, 2014. An official Pre-Survey Meeting was held on March 18, 2015. State Forest Environmental Review applications were submitted on March 4, 2016. PennEast has continued to coordinate with PADCNR since the application submittals, responding to PADCNR requests to avoid, minimize, and mitigate impacts to State Parks and State Forests. PennEast anticipates that a Post-Survey Meeting will be held in February 2019 to resolve any outstanding issues regarding the request for ROW.

Table CA-L3-5
Federal and State Lands Crossed by the Project Facilities in Carbon County

Municipality[1]	Approximate Milepost	Recreation Area	Approximate Pipeline Crossing Length (miles)	Land Affected During Construction (acres)[2]	Acreage within the Permanent ROW[3]
Kidder	23.1	Francis E Walter Dam National Recreation Area	0.1	0.7	0.3
Kidder	25-25.8	State Game Land 40	0.9	24.4	3.1
Kidder	29.3R2-30R2; 30.5R2-31.5R2; 32.6R3-34.6R2; 34.8R3	Hickory Run State Park	3.5	36.2	12.6
Kidder	30R2-30.5R2	State Game Land 129	0.5	7.3	1.9
Penn Forest	36.5R3-37.1R3	Weiser State Forest	0.6	6.8	2.3
Towamensing	43.1R3-44.1R3	Beltzville State Park	1.1	3.1	6.4
Lower Towamensing	N/A - Access Road	State Game Land 168	-	0.6	0.0

Notes:
1. Sources: PennDOT Pennsylvania municipality boundaries dated 1/2017. Available at www.pasda.psu.edu.
2. Acreage affected by construction represents the total amount of workspace within the limits of disturbance, including the acreage within the permanent ROW.
3. Not all permanent ROW will be maintained as herbaceous cover. In wetland or riparian areas, only a 30-foot wide ROW will be maintained. Where surface impacts are avoided by HDDs, the ROW will not be mechanically cleared during project construction or operation.

Beltzville State Park

As described above, the PADCNR leases Beltzville State Park which is owned by the USACE. The impacts associated with Beltzville State Park are described above.

Hickory Run State Park

The entire portion of the PennEast pipeline that crosses Hickory Run State Park is co-located with an existing product pipeline. Therefore, only minor impacts to the park are anticipated as a result of the Project. PennEast crosses Hickory Run State Park at MP 29.3R2 to 30.0R2, 30.5R2 to 31.5R2, 32.6R3 to 34.6R2, and 34.8R3 for an approximate crossing length of 3.5 miles. Approximately 36.2 acres of lands associated with Hickory Run State Park will be affected by the construction of the Project and 12.6 acres will be located in the permanent ROW. The pipeline will not cross any hiking trails or recreational areas. The pipeline will cross lands adjacent to the Mud Swamp Natural Area located in the southeast corner of the park, and the Hickory Run Boulder Field is located to the west of MP 29.5R2. No visual or aesthetic impacts are anticipated to occur to these areas due to the co-location of the pipeline with the existing utility. Due to its distance from the proposed route, visitor access to the Boulder Field will not be affected. As per PADCNR request, PennEast has reduced the total construction width to 75-feet with a 30-foot-wide ROW throughout the Park.

PADCNR expressed particular concern about potential adverse impacts to sensitive ecological resources in the area of Mud Run in the southern reach of Hickory Run State Park. In an effort to avoid or further minimize impacts to these resources, PennEast evaluated several construction method alternatives, but found that the geotechnical conditions proved to be unfavorable for trenchless technology. Since a trenchless crossing of Mud Run was deemed infeasible due to geologic conditions encountered at the time of survey, PennEast evaluated alternative construction methods to reduce impacts to Mud Run and the ecological resources in the area. These methods include moving the pipeline to the west side of the Buckeye Pipeline easement at the Mud Run crossing to keep the working side and spoil side on the west side and therefore, avoid disturbance to the east side of the easement. PennEast also reduced workspace in areas where the alignment is co-located with Buckeye's ROW. More information regarding alternatives considered near Mud Run is provided in the Alternatives Analysis (JPA Section S).

Weiser State Forest

State forests in Pennsylvania are managed by the Bureau of Forestry, which is a subdivision of PADCNR. Weiser State Forest is comprised of 16 tracts in Dauphin, Carbon, Columbia, Lebanon, Montour, Northumberland, and Schuylkill counties which total almost 30,000 acres (PADCNR, 2018b). PennEast crosses a tract of Weiser State Forest from MP 36.5R3 to 37.1R3 for an approximate crossing length of 0.6 miles. Approximately 6.8 acres of lands associated with Weiser State Forest will be affected by the construction of the Project and 2.3 acres will be located in the permanent ROW. The proposed route was sited to co-locate PennEast's ROW with an existing Buckeye Pipeline ROW through this State Forest.

3.B.1(ii) National Natural Landmarks

National Natural Landmarks designated by the U.S. NPS within Carbon County include the Hickory Run Boulder Field located within Hickory Run State Park (NPS, 2016). This landmark is separated from the Project by approximately 0.5 miles of dense forest/woodland and the Project has been co-located with an existing product pipeline for the entire crossing through Hickory Run State Park. Therefore, no impacts to visual or aesthetic resources are anticipated in this area as a result of the Project.

S3.B.1(iii) National Wildlife Refuge, or Federal, State, Local, or Private Wildlife or Plant Sanctuaries

No Federal, state, local, or private wildlife or plant sanctuaries are located within the Project area (U.S. Fish and Wildlife Service [USFWS], 2018).

S3.B.1(iv) State Game Lands

Management of SGLs in Pennsylvania is implemented by the PGC. Consultation between PennEast and representatives from PGC began in September 2015 and ROW applications were submitted in 2017. The PGC issued license agreements for the Project on December 5, 2018. In Carbon County, construction of the Project will result in the crossing of SGL No. 40, 129, and 168.

State Game Land No. 40

SGL No. 40 is crossed by the Project from MP 25.0 to 25.8 in Carbon County, Pennsylvania, for a length of approximately 0.9 miles. Approximately 24.4 acres of lands associated with SGL No. 40 will be affected by construction of the Project and 3.1 acres will be located in the permanent ROW and therefore subject to periodic operational ROW maintenance (i.e., mowing). The Project does not cross any existing trails in SGL No. 40 (PGC, 2018). The Project route is co-located with an existing pipeline ROW; therefore, only minor impacts to SGL No. 40 are anticipated as a result of tree clearing for the Project.

State Game Land No. 129

SGL No. 129 is crossed by the Project from MP 30.0R2 to 30.5R2 in Carbon County, Pennsylvania, for a length of approximately 0.5 miles. Approximately 7.3 acres of lands associated with SGL No. 129 will be affected by the construction of the Project and 1.9 acres will be located in the permanent ROW and therefore subject to periodic operational ROW maintenance (i.e., mowing). The Project does not cross any existing trails in SGL No. 129 (PGC, 2018). The Project route is co-located with an existing pipeline ROW; therefore, only minor impacts to SGL No. 129 are anticipated as a result of tree clearing for the Project.

State Game Land No. 168

SGL No. 168 is crossed by the Project beginning at MP 50.8 in Monroe County, Pennsylvania. Approximately 1.5 miles of pipeline will be constructed within SGL No. 168 in Monroe and Northampton Counties. Approximately 18.4 acres of lands associated with SGL No. 168 will be affected by the

construction of the Project, including the workspace to construct the pipeline and temporary access within Carbon, Monroe, and Northampton Counties. Within Carbon County, impacts will be limited to the temporary use of an existing access road to support Project construction. As noted in Table CA-L3-5, there will be no pipeline or permanent operations impacts within SGL No. 168 in Carbon County. Temporary use of the existing access road will result in 0.6 acres of temporary impacts.

S3.B.1(v) Areas Identified as Prime Farmland

As described in Module 2, 108.1 acres of area classified as prime farmland or farmland of statewide importance will be located within the construction work area within Carbon County, which includes 67.9 acres in the temporary ROW. In addition, 40.2 acres of area classified as prime farmland or farmland of statewide importance will be located within the permanent ROW.

To minimize impacts to agricultural land, topsoil would be stripped to a depth of up to 12 inches and segregated away from subsoil to prevent mixing of soils in either the full work area or in the trench and subsoil storage area, unless the landowner or land management agency specifically approves otherwise. Full ROW topsoil stripping would avoid issues such as topsoil mixing from deep rutting and topsoil compaction. Topsoil would be stored in a windrow parallel to the pipeline trench in such a manner that it would not become intermixed with subsoil materials.

During the restoration phases of the Project, topsoil would be replaced back to its original location. To avoid compaction and rutting, the subsoil would be plowed prior to replacing the segregated topsoil. During placement, topsoil and subsoil would be tested for compaction at regular intervals and compared to similar soil types in undisturbed areas and returned to approximate preconstruction conditions. The entire ROW would then be disked. PennEast would utilize penetrometers or other appropriate devices to conduct the tests and would maintain detailed records of the test results. Additional plowing or tilling would be performed if further compaction occurs from subsequent construction and cleanup activities. Plowing/ripping and disking would be done at a time when the soil is dry enough for normal tillage operations to occur on undisturbed farmland adjacent to the areas to be ripped.

Following construction, all agricultural land would be properly restored and returned to pre-Project contours in accordance with Federal Energy Regulatory Commission's (FERC's) Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) (FERC, 2013) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures). Additionally, PennEast would provide landowners with contact information to enable them to request certain land leveling activities should uneven settling or surface drainage problems develop. PennEast would provide such land leveling efforts within 45 days of such landowner requests weather and access permitting and to the extent such efforts do not violate any governmental agency permits or approvals. All fencing and gates removed for the installation of the pipeline shall be replaced or installed according to the landowner's specifications.

PennEast would employ third party environmental inspectors (EIs) to monitor all construction and restoration activities to maintain compliance with the Erosion and Sediment Control Plan (E&SCP), FERC order conditions, other environmental permits and approvals, and environmental requirements in landowner agreements. Active croplands temporarily disturbed by the proposed Project activities are expected to return to their original condition following the completion of the construction of the Project.

Following construction, pipeline operation would not prohibit the use of the Project ROW for agricultural purposes, or the use of heavy farm equipment within the permanent ROW. Therefore, Project related impacts to agricultural areas along the pipeline route would be limited to the Project construction period and the time required for vegetative regrowth to be established after construction is completed.

PennEast would work with farmers to measure both pre-and post-construction crop yields until such time as yields have reached pre-construction levels. PennEast would compensate farmers for impacts to crop yields caused by the Project and would work diligently to eliminate the impact. Agricultural lands would be restored using approved, modern mitigation techniques designed to reestablish pre-existing productive use of the agricultural lands, which is typically within 3 years following Project completion.

S3.B.1(vi) Source for a Public Water Supply

As described in EA Module 2, PennEast used several data sources including public sources, consultations with public water suppliers, desktop assessments, and landowner outreach to identify public and private water supplies near the Project area. The data collection methods and the specified water supply search radii are detailed in EA Module 2 Section S2.A.5. In Carbon County, 43 private water supply wells have been identified within the well monitoring buffer; no public wells have been identified within the well monitoring buffer. Within the PADEP-specified buffers at HDD locations, PennEast has not identified any private or public water supply wells within 450 feet of or 0.5 mile, respectively, of the Interstate-80 or Beltzville Lake HDDs.

In accordance with its Well Monitoring Plan (Appendix CA -L-3G) and FERC Certificate conditions, PennEast will monitor all wells within 150 feet of the Project workspace (500 feet in karst areas and near proposed HDDs). The monitoring will require the approval of the landowner and will include both public and private water supplies.

PennEast will implement the notification protocol outlined in its HDD Inadvertent Returns and Contingency Plan (Appendix CA -L-3C), contacting landowners with public or private water supply wells, if drilling fluid losses occur during HDD operations.

S3.B.1(vii)Natural Wild or Scenic River or the Commonwealth's Scenic Rivers System

The PennEast pipeline route was carefully chosen such that no sections of river crossed by or located within 0.25 miles of the Project are included in the National Wild and Scenic Rivers System (NWSRS) (NWSRS, 2018) or are designated as PA Scenic Rivers (PADCNR, 2018b).

Outside of the Project corridor, a portion of the Lehigh River located to the southwest of the Project and downstream of the Francis E. Walter Dam near MP 23.0 is designated as a Pennsylvania Scenic River. Additionally, portions of the Delaware River beyond 0.25 miles to the north and south of the Project where it crosses the Delaware River near MP 77.6 are included in the NWSRS.

S3.B.1(viii) Designated Federal Wilderness Areas

No registered wilderness areas designated under the Wilderness Act would be crossed or located within 0.25 mile of the Project (Wilderness.net, 2018).

S3.C Subfacility Details Table

Please see Appendix CA-L-3A for a Table with subfacility details including an identifier, code, description, affected resource, coordinates, and required details.

S3.D Resource Function Effects

S3.D.1 Unique Project Subfacility Identifier

The Project impacts have been categorized into the following PADEP-defined subfacilities:

CULV: Culvert. This subfacility is used for new culverts and culvert replacements. As described in Section S3.A.1, the proposed Project includes the installation of one new culvert and the replacement of two existing culverts in Pennsylvania. Within Carbon County, this subfacility is only used for the installation of a new culvert associated with the Kidder Compressor Station and the replacement of one existing culvert on access road AR-034.

FLACT: Floodway Activity. This subfacility is used for permanent impacts within in floodways. For the overall Project, this includes floodway impacts associated with the installation of one new culvert and the replacement of two existing culverts in Pennsylvania. Within Carbon County, this includes the installation of one permanent culvert and the replacement of one existing culvert.

PIPE: Pipeline or Conduit. This subfacility is used for all pipeline and associated permanent ROW impacts. The Project mainline pipeline is 36 inches in diameter, the Blue Mountain Lateral is 4 inches in diameter, and the Hellertown Lateral is 24 inches in diameter. The maintained ROW width for each pipeline is 30 feet. The pipeline will be installed a minimum of five feet below each watercourse and three feet below each wetland. Per PADEP guidelines, the pipeline and its ROW is considered a permanent impact to wetlands, watercourses, and floodways. Pre-construction contours will be restored, and watercourse and floodway cross-sectional areas will not be altered as a result on the pipeline installation.

TMPWI: Temporary Wetland Impact. This subfacility is used for direct and indirect impacts to wetlands that occur on a temporary basis. This subfacility is used to categorize temporary workspace and is inclusive of the 30-foot maintained ROW that is also categorized as the subfacility PIPE.

WTDIM: Direct Wetland Impact.**:** This subfacility is used for all direct permanent wetland impacts. As discussed in Section S3.A.1 above, this type of impact is limited to permanent fill within PEM and PFO mosaic wetlands associated with the Kidder Compressor Station in Carbon County.

S3.D.2 Impact Types

Water Quantity and Streamflow

A discussion of the Project's potential impacts on various water quantity and streamflow functions, such as: drainage patterns, flushing characteristics, current patterns, groundwater discharge, natural ground and surface water recharge, and storm and floodwater storage and control is detailed below.

Natural Drainage Patterns

Construction of the proposed Project will have a temporary impact on natural drainage patterns due to the use of heavy equipment, the removal of vegetation, the grading of the ROW, the open cut trenching of wetlands and watercourses, and the use of diversion devices to direct surface flows away from exposed soils. PennEast will employ the procedures contained within the E&SCP (JPA Section M) to minimize impacts to drainage patterns during construction and to ensure proper restoration of surface contours and elevations during restoration. BMPs specific to the preservation of natural drainage patterns include:

1. The segregation of topsoil within wetlands to avoid compaction of nutrient rich soils containing native seed stock;
2. The use of equipment mats in wetlands to aid in the weight distribution of heavy equipment and minimize rutting;
3. Expediting construction through wetland areas and across watercourses such that the duration of open trench is limited to the minimum time necessary to safety install the pipeline and disturbed locations are quickly returned to their pre-construction condition;
4. Necking the construction ROW down to a width of 75 feet compared to 100 feet to further minimize impacts at wetland and watercourse crossings;
5. Unless deemed necessary and approved by FERC, not siting additional temporary workspaces within 50 feet of wetland and watercourse crossings;
6. The use of trench plugs at wetland and watercourse crossings to avoid the disruptions of natural drainage flows;
7. Re-establishing natural surface grades and contours following backfilling operations to maintain existing flow patterns and hydrology drainage within wetlands; and
8. The use of structural and non-structural BMPs to limit erosion and quickly re-establish vegetation cover.

The construction and restoration procedures described above are anticipated to minimize impacts during construction and adequately restore the direction and flow rates to pre-construction conditions during restoration which will promote re-establishment of hydrophytic vegetation and wetland hydrology. As a result, no significant impacts to natural drainage patterns are anticipated in Carbon County.

Flushing Characteristics

Construction of the Project is not anticipated to have a substantial impact on the flushing characteristics of the 61 watercourses crossed in Carbon County. Dry crossing techniques will be employed for all watercourse crossings where flow will be maintained either through the use of dam and pump, flume pipes, or cofferdams; therefore, no substantial loss of flow will occur during installation of the pipeline facilities. The extent of clearing, stumping and trenching at watercourse crossings will be limited to the dimensions necessary to install the pipeline. Watercourse substrate will be segregated and reinstalled following installation of the pipeline and to the extent practicable, all drainage patterns, surface contours and bed and bank formations will be returned to their pre-construction condition. Watercourse crossings will be completed within 24 to 48 hours (respectively) and immediate floodplain locations will be stabilized with structural and non-structural BMPs to ensure proper restoration. Additionally, there are no watercourse relocations, enclosures or channel deepening/dredging activities proposed in conjunction with the Project's 61 watercourse crossings in Carbon County that could alter flushing characteristics in the Project area. As a result, no significant impacts to flushing characteristics are anticipated in Carbon County.

Current Patterns

Similar to the analysis provided for natural drainage patterns and flushing characteristics above, construction of the Project is not anticipated to have a substantial impact on the current patterns associated with the 59 wetland and 61 watercourse crossings in Carbon County. PennEast will implement the BMPs detailed within the E&SCP (JPA Section M) to minimize impacts during construction and ensure proper restoration, resulting in the return of pre-construction surface contours and elevations within wetlands and watercourse channels. Additionally, there are no watercourse relocations, enclosures or channel deepening/dredging activities proposed in conjunction with the Project's 61 watercourse crossings in Carbon County that could alter current patterns in the Project area. As a result, significant impacts to wetland and watercourse current patterns within Carbon County are not anticipated to occur.

Groundwater Discharge for Baseflow

The potential for groundwater discharge for baseflow to watercourses that are crossed by the Project is anticipated to be low. Irrespective of this, PennEast will minimize impacts to groundwater resources by implementing the construction and restoration procedures found within the E&SCP (JPA Section M). Groundwater management BMPs to be employed during construction includes the following:

1. Discharging of trench water to filtration devices positioned in vegetated areas to allow for the natural infiltration of water back into the local groundwater column;
2. The use of trench plugs at the enter and exit points of wetland and watercourse crossings to maintain the existing wetland hydrology, drainage patterns and avoid draining of the resource area back into the Project workspace;
3. The use of PennEast's Preparedness, Prevention, and Contingency (PPC) Plan (Appendix CA-L-3B) to minimize and mitigate for the unexpected discharge of fuels, oils or other chemicals to the ground or water surface during construction, along with use of the HDD Inadvertent Returns and

Contingency Plan (Appendix CA-L-3C) to address potential impacts associated with an inadvertent release of drilling fluid during trenchless crossings;

4. The directing of storm water off the construction ROW to vegetated areas to allow for natural groundwater infiltration and recharge;
5. The return of segregated topsoil, natural surface elevations, drainage patterns and contours upon completion of construction; and
6. Restoration and monitoring of the pipeline ROW per federal and state requirements to ensure the success revegetation of the ROW.

Use of the BMPs described above, combined with complete revegetation of the Project ROW, is expected to minimize impacts to groundwater during construction and operation of the Project such that groundwater discharges that may contribute to the baseflow supply to watercourses or wetland hydrology are unaffected by the Project.

Natural Recharge Area for Ground and Surface Water

PennEast has estimated that the majority of the wetlands crossed by the Project in Carbon County are assumed to be in close proximity to areas of seasonal groundwater discharge or have a direct association with surface waters. To mitigate for potential impacts to groundwater resources, PennEast will implement similar construction and restoration BMPs to the descriptions provided above for impacts to groundwater discharge for baseflow. As a result, the likelihood of significant impacts occurring to areas that contribute to the natural recharge of surface waters as a result of construction and operation of the proposed Project in Carbon County are perceived to be relatively low.

Storm and Floodwater Storage and Control

Given the linear nature of the proposed Project, temporary impacts within areas subject to flooding are unavoidable and as a result of the proposed activities, approximately 6.4 acres of temporary earth disturbance in Carbon County will occur within the 100-year floodplain. As noted in Section S2.D of Module 2, wetlands and watercourses within Carbon County are anticipated to provide various levels of flood storage and control functions. The affected wetlands and watercourses will incur a temporary reduction in their capacity to manage storm water and flood flows. To mitigate for temporary disturbances to these features, PennEast will implement the BMPs and construction procedures detailed in the E&SCP (JPA Section M) and summarized below.

- When working in floodway locations, PennEast will make every effort to expedite construction and will remove equipment and construction materials immediately following restoration of the workspace;
- During construction, PennEast will monitor the local weather forecast and watercourse flow conditions and will implement the necessary measures such as the removal or securing of construction materials or equipment in the event that a high-water occurrence is anticipated;

- PennEast will ensure all flows are maintained at watercourse crossing locations and sufficient mechanisms and procedures are in place to accommodate unexpected increases in watercourse flow;
- Watercourse crossings will be completed within 24 to 48 hours (respectively) and immediate floodplain locations will be stabilized with structural and non-structural BMPs to ensure proper restoration;
- PennEast will divert storm water off the ROW to vegetated locations and install and maintain necessary water diversions such as trench breakers and water bars to control and slow storm water movement along the ROW; and
- PennEast will restore wetland and watercourse crossings to their preconstruction surface grades and contours and will monitor revegetation to minimize or avoid permanent impacts on vegetated floodway areas.

The procedures identified above are anticipated to allow for the safe installation of the Project, while minimizing impacts to floodway locations. Additionally, all permanent components of the Project located in floodway areas will be installed at a minimum of three feet below surface grade. No permanent structures will be located in floodway areas. As a result, operation and construction of the Project is anticipated to have no significant impact on the ability of the affected wetlands and watercourses to provide storm and floodwater storage and control functions.

S3.D.2(ii) Biogeochemical Impacts

Water Quality

The following sections provide a summary of the Project's potential impacts on several water quality characteristics, such as: preventing pollution, sedimentation control and patterns, salinity distribution and natural water filtration.

Preventing Pollution

Land use cover types associated with the Project in Carbon County are comprised of agricultural (10%), commercial/industrial (3%), forest/woodland (73%), open land (13%), and residential (1%) land. The majority of the Project crosses rural areas, where pollution is generally minimal. PennEast will employ the proper construction and restoration procedures to return wetland resources to their pre-construction condition, such that they may retain their ability to provide pollution prevention functions following Project construction. PennEast will implement a PPC Plan (Appendix CA-L-3B) to minimize and mitigate for the unexpected discharge of fuels, oils or other hazardous chemicals to the ground or water surface during construction, along with the HDD Inadvertent Returns and Contingency Plan (Appendix CA-L-3C) to address potential impacts associated with an inadvertent release of drilling fluid during HDD crossings. The construction and restoration procedures detailed herein are expected to allow for installation of the Project facilities while minimizing the potential for pollution.

Sedimentation Control and Patterns

As identified in Section S2.D.2 of Module 2, wetlands within the Project area may possess the ability to provide sediment retention; however, due to the rural landscape and limited surface disturbances noted, minimal sedimentation retention by wetlands is expected to occur in Carbon County. Regardless, PennEast will utilize the BMPs detailed within the E&SCP (JPA Section M) to minimize the potential for sedimentation into wetlands and watercourses during construction and will fully restore affected wetlands and watercourses (to the extent practicable) to their pre-construction condition. All Project activities related to the installation and maintenance of sediment control devices will be conducted in accordance with the procedures contained within the PADEP Manual as well as the provision contained with the PADEP Chapter 102 Rules and Regulations (25 Pa. Code Chapter 102). The construction and restoration methods identified for the Project are anticipated to minimize and avoid impacts related to sedimentation.

Salinity Distribution

All surface waters crossed by the Project in Carbon County consist of freshwater resources and are free of any naturally occurring or artificial sources of salinity; therefore, impacts pertaining to potential salinity distribution were not evaluated for the Project.

Natural Water Filtration

Though it may not be their principal function, all wetlands crossed by the Project in Carbon County are anticipated to provide some level of natural water filtration for existing ground and surface water systems. PennEast will minimize impacts to wetlands affected by Project construction, such that they preserve their ability to function as a natural water filtration medium following installation of the pipeline facilities. The ability of the affected wetlands to provide filtration properties will temporarily be reduced due to compaction from the use of heavy equipment, the removal of vegetation, the grading of the ROW, the open cut trenching of wetlands and the use of diversion devices to direct surface flows off and away from the ROW. PennEast will employ the procedures contained with the E&SCP (JPA Section M) to provide adequate filtration and avoid storm water pollution during construction. Structural BMPs specific to these measures may include use of wood chip berms, water bars, straw mulch, straw bales, drainage swales and compost filter socks. Restoration BMPs will be implemented immediately following backfilling of the trench and grading of the ROW within wetland locations. PennEast will quickly stabilize and restore affected wetlands, including the return of segregated topsoil, the re-establishment of natural surface grades and contour elevations, and the distribution of appropriate seed mixes followed by a straw mulch cover or, if applicable, erosion control blankets. The construction and restoration procedures described within the E&SCP (JPA Section M) are anticipated to provide sufficient filtration mechanisms during construction and adequately restore impacted resource areas to their pre-construction conditions during restoration, which will promote re-establishment of wetland hydrology and vegetation, thus continuing to allow for natural water filtration.

Food Chain Production

PennEast has determined that wetlands and watercourses crossed by the proposed Project in Carbon County are considered to have varying levels of potential for food chain production, and as a result

support all trophic levels including producers and primary and secondary consumers. Temporary impacts to food chain production will occur as a result of the Project. The removal of vegetation will initially result in the temporary displacement of species as well as the potential mortality of individuals that pose mobility limitations. Food chain in the affected wetlands will be temporarily reduced until revegetation of disturbed ROW locations is completed. PEM wetlands are expected to quickly recover from temporary alterations. PennEast will commence restoration and revegetation activities within wetlands immediately following final grading. Outside of the 30-foot maintained ROW, PFO and PSS wetlands will be replanted with trees and shrubs to enhance restoration. However, it is anticipated that even with reforestation, the complete re-establishment of PSS and PFO wetlands will take several years. In addition to the restoration plantings, volunteer species from unaffected adjacent habitats are anticipated to aid in the revegetation process and therefore, contribute to the return of producers followed by primary and secondary consumers.

Similarly, the food chain production for watercourses crossed by the Project in Carbon County will be temporarily impacted at the watercourse crossing location and may be subject to indirect impacts downstream of the workspace. Within the trench line, immediate impacts will occur to aquatic vegetation as well as the benthic communities resulting from the removal of the banks and watercourse substrate. Downstream sedimentation may occur; however, given the required timelines for competition (24 to 48 hours) limited impacts associated with drifted sediments are anticipated. The BMPs for watercourse crossings proposed for the Project (i.e., use of dry construction methods, segregation of watercourse substrate, re-establishment of contours, replanting of vegetation and use of erosion control banks as well as other structural BMPs) are anticipated to fully restore the affected aquatic communities such that impacts remain localized and temporary in nature.

S3.D.2(iii) Habitat Impacts

General Habitat Provision

The following sections provide a description of the associated environmental impacts on each aquatic resource area in terms of its post-construction ability to continue to provide; food chain production, general habitat, nesting capabilities, spawning, rearing, resting, migration, feeding, escape cover and other characteristic it might offer.

Nesting

Migratory birds are protected under regulations including the Migratory Bird Treaty Act (MBTA) and to a lesser extent, provisions contained within the Fish and Wildlife Coordination Act (FWCA). In consultation with the USFWS, the Ecological Field Office in Pennsylvania requested adherence to their Adaptive Management Practices for Conserving Migratory Birds. PennEast has committed to adhere to the Adaptive Management Practices wherever feasible. These conservation measures include:

- Co-locating the pipeline and associated facilities with existing roads and other disturbed areas. A significant portion of the pipeline within Pennsylvania – 30.7 miles - is proposed to be co-located with existing utility ROW.

- Minimizing the width of the temporary construction ROW and avoid grubbing where possible to encourage the re-establishment of woody vegetation. Typical construction workspace for the Project will range from 75 feet to 125 feet wide.

- Minor hand clearing between HDD entry and exit points includes branch and low sapling/shrub clearing to maintain line of sight in between pipeline marker posts, typically the width of a walking trail. There will be no cutting of mature trees for line of sight or marker posts. Minimizing the width of the permanent, maintained ROW to only that which is absolutely necessary to maintain the integrity of the pipeline. The operational easement will be 30-feet wide, except when near wetlands and watercourse crossings. A 10-foot wide operational easement centered on the pipeline will be maintained in an herbaceous or scrub/shrub vegetative state in emergent or scrub-shrub wetlands. A 30-foot wide operational easement centered on the pipeline will be maintained in an herbaceous or scrub/shrub vegetative state in forested wetlands. No large trees would be allowed within 15-feet of the proposed pipeline. The remaining temporary corridor would revert to its pre-construction land use/land cover once construction is complete.

- Maximizing the rotation of mowing and/or clearing along that maintained ROW to allow for the establishment of more beneficial wildlife habitat.

- Adhering to tree clearing restrictions, felling trees between November 1 and March 31.

- Performing any future mowing and/or clearing along the maintained ROW between September 11 and March 14 to prevent impacts to grassland bird species.

- Using seed mixes for restoration that will minimize competition with native woody plant species.

As discussed in Section S2.D.2 of Module 2, the majority of the wetland habitats crossed by the Project are estimated to provide nesting opportunities for various songbirds, raptors, waterfowl and grassland species. The clearing and placement of equipment mats over wetland vegetation will have a direct short-term impact on nesting habitat within Carbon County. To minimize clearing impacts, PennEast has sited approximately 41 percent of the Project in Carbon County adjacent to existing utility ROWs and roadway corridors.

Following installation of the pipeline facilities, nesting opportunities for bird species requiring interior forest locations or dense tree canopies will be permanently reduced in upland locations and temporarily reduced in wetland areas; however, the nesting possibilities for species requiring edge habitats or nest sites near or at the ground surface will be increased. The revegetation procedures proposed for the Project combined with PennEast's commitment to adhere to the MBTA timing restrictions for clearing operations is expected to minimize impacts to nesting habitat such that long-term adverse impacts within Carbon County are not anticipated to occur.

Spawning

Spawning opportunities for Warmwater Fishes (WWF) and Cold Water Fishes (CWF) are predicted to be present in the majority of the perennial watercourses crossed by the Project and seasonal amphibian

breeding habitat (vernal pools) may be found in some of the wetlands located within the Project workspace in Carbon County. Direct impacts to watercourse spawning activities will be avoided through adherence of the allowable instream construction work windows identified by the PFBC for each watercourse crossed by the Project. To minimize the potential for post-construction disturbances, PennEast will implement the BMPs found within the E&SCP (JPA Section M) which include, but are not limited to: the use of dry construction methods, segregation and replacement of watercourse substrate, re-establishment of pre-construction contours, replanting of vegetation, use of erosion control banks as well as other structural BMPs and the post-construction monitoring of restored wetlands and watercourses. Direct impacts to vernal pools may occur if construction activities coincide with the amphibian-breeding season. However, disturbances to vernal habitats will be short-term in nature, as ROW locations will be restored to their original contours and elevations and revegetated following installation of the pipeline system. As a result, significant impacts to spawning activities are unlikely to occur within Carbon County.

Rearing

Wildlife rearing opportunities are anticipated to be moderate to high within the undisturbed forested portions of the proposed Project ROW. During construction of the Project, impacts to interior forested wetlands will occur, therefore reducing the overall available habitat for wildlife rearing opportunities in the Project area. As a result, species rearing young in these locations will be temporarily displaced and are expected to relocate to unaffected adjacent areas. Restoration of the Project will allow for complete revegetation of scrub-scrub and forested communities (excluding locations utilized for line of site pipeline patrols) thus long-term significant effects on aquatic environments utilized for wildlife rearing are not anticipated to occur.

Resting

Wetlands crossed by the Project in Carbon County contain habitat that has the potential to be used for resting by a variety of birds, amphibian, reptile, and mammal species. However, similar to the analysis provided above for wildlife rearing, resting behaviors are anticipated to occur more frequently in areas free of human disturbance, which offer more protection and cover for resting activities. As a result, impacts to aquatic habitats functioning as wildlife resting locations will occur within forested segments of the Project. Species resting in these locations will be temporarily displaced and are expected to relocate to unaffected adjacent areas. Restoration of the Project will allow for complete revegetation of scrub-scrub and forested wetland communities (excluding locations maintained for line of site pipeline patrols) thus long-term significant effects on aquatic environments utilized for wildlife resting are not anticipated to occur.

Migration

Wetlands crossed by Project in Carbon County contain habitat that has the potential to be used during migration periods by a variety of raptors, waterfowl, songbirds, amphibians, and reptiles. However, similar to the analysis provided for wildlife rearing and resting above, temporary use by wildlife for cover, resting or feeding activities is anticipated to be more prevalent in areas absent of land disturbances. The revegetation procedures proposed for the Project, combined with PennEast's commitment to adhere

to the MBTA timing restrictions for tree clearing, is expected to minimize impacts to wildlife, such that long-term adverse impacts within Carbon County are not anticipated to occur.

Seasonal migration of trout during spawning is likely to occur within 61 Wild Trout Waters (WTW) /Approved Trout Waters (ATW) and Stocked Trout Waters (STW) crossed by the Project in Carbon County. Direct impacts to migration activities will be avoided through adherence of the allowable instream construction work windows identified by the PFBC for each watercourse crossed by the Project. Additionally, PennEast will implement the BMPs found within the E&SCP (JPA Section M) which include, but are not limited to: the use of dry construction methods, segregation and replacement of watercourse substrate, re-establishment of pre-construction contours, replanting of vegetation, use of erosion control blankets as well as other structural BMPs and the post-construction monitoring of restored wetlands and watercourses. These BMPs are expected to restore affected watercourses following installation of the pipeline facilities.

Feeding

PennEast has determined that wetlands and watercourses crossed by the proposed Project in Carbon County are considered to have varying levels of potential for feeding. Feeding opportunities within wetland habitats will be directly impacted by clearing and excavation activities resulting in the temporary relocation of wildlife species until revegetation of disturbed ROW locations is completed. As similar to the Project's impacts on food chain production, wetlands comprised of emergent or scrub-shrub cover types are expected to quickly recover from temporary alterations as PennEast will commence restoration and revegetation activities within wetlands immediately following backfilling of the trench. Wetland systems comprised of forested communities will be allowed to revert back to their original site condition (excluding locations maintained for line of sight), however, it is anticipated that complete re-establishment will take several years to occur. Volunteer species from unaffected adjacent habitats are anticipated to aid in the revegetation process and therefore, contribute to the return of food sources.

Watercourses crossed by the Project in Carbon County that are considered to have varying levels of potential for feeding will be temporarily impacted at the watercourse crossing location and may be subject to indirect impacts downstream of the workspace. Within the trench line, immediate impacts will occur to aquatic vegetation as well as the benthic communities resulting from the removal of the banks and watercourse substrate. Downstream sedimentation may occur; however, given the required timelines for competition (24 to 48 hours) limited impacts associated with drifted sediments are anticipated. The BMPs for watercourse crossings proposed for the Project are anticipated to fully restore the affected aquatic communities such that impacts to feeding remain localized and temporary in nature.

Escape Cover

Wetlands crossed by Project in Carbon County contain habitat that has the potential to be used for escape cover by a variety of birds and mammal species. However, as similar to the analysis provided above for wildlife rearing and resting behaviors, opportunities for escape cover are anticipated to occur more frequently in areas free of human disturbance. As a result, impacts to aquatic habitats functioning as escape cover for wildlife will occur within forested segments of the Project. Species previously inhabiting these locations will be temporarily displaced and are expected to relocate to unaffected

adjacent areas. Restoration of the Project will allow for complete revegetation of scrub-scrub and forested wetland communities (excluding locations maintained for line of site pipeline patrols) thus long-term significant effects on aquatic environments utilized for wildlife escape cover are not anticipated to occur.

Other Habitat

No other general habitat considerations were identified during the wetland and watercourse delineations or threatened and endangered (T&E) species surveys in Carbon County.

Habitat for Threatened and Endangered Plant and Animal Species

Requests for information regarding the potential presence of federal and state listed T&E species within the Project area were sent to the USFWS Pennsylvania Field Office, National Marine Fisheries Service (NMFS), PFBC, PGC and PADCNR. Each agency evaluated the potential for the Project to affect T&E species under their jurisdiction. Table CA-L2-5 in Module 2 lists the survey and reporting status of the plant and animal species identified through consultations with the federal and state agencies as threatened, endangered, candidate, or of concern in Carbon County. The species that may be impacted by the Project in Carbon County include northern long-eared bat (*Myotis septentrionalis*, federal threatened), bog turtle (*Glyptemys muhlenbergii*, federal threatened), eastern small-footed bat (*Myotis leibii*, state threatened), timber rattlesnake (*Crotalus horridus*, delisted), Allegheny woodrat (*Neotoma magister*, state threatened), northern flying squirrel (*Glaucomys sabrinus macrotis*, state endangered) northern cricket frog (*Acris crepitans*, state endangered), variable sedge (*Carex polymorpha*, state endangered), northern panic grass (*Dicanthelium boreale*, state status tentatively undetermined), rough-leaved aster (*Eurybia radula*, state proposed threatened), thread rush (*Juncus filiformis*, state rare), Appalachian climbing fern (*Lygodium palmatum*, state rare), golden club (*Orontium aquaticum*, state rare), white fringed orchid (*Platanthera blephariglottis*, state proposed endangered and sensitive), and Torrey's bulrush (*Schoenoplectus torreyi*, state endangered).

On November 28, 2017, the USFWS issued a Biological Opinion (BO) for impacts that the Project may have on the northern long-eared bat and bog turtle. In its cover letter to the FERC, the USFWS stated that the Project is not likely to adversely affect the dwarf wedgemussel, Indiana bat, or the northeastern bulrush. In their July 29, 2019 amended BO, the USFWS determined that the Modifications will not result in affects above what was analyzed in the November 29, 2018 BO. The USFWS addressed effects analysis for species under informal consultation in the amended BO cover letter; they also finalized formal consultation with "no jeopardy" findings for the northern long-eared bat and the bog turtle in the amended BO.

<u>Northern Long-eared bat</u>

In its BO, the USFWS concluded that tree removal within 0.25 mile of northern long-eared bat hibernacula is not likely to adversely affect the species, and vibrations generated by heavy machinery are not anticipated to result in micro-climatic or structural changes to hibernacula. However, the USFWS also concludes that tree removal within 150 feet of maternity roosts is likely to adversely affect northern long-eared bat individuals with maternity colonies close to the Project. Tree removal will occur outside of the

restricted pup season window, so this take is not prohibited by the 4(d) rule. To minimize impacts to the species, PennEast will implement the following conservation measures in Carbon County:

- PennEast will only clear trees ≥5 inches diameter-at-breast-height (dbh) between November 1 and March 31.

- PennEast will only clear trees ≥3 inches dbh between November 15 and March 31 within known fall swarming habitat areas.

- PennEast will not blast within 0.25-mile of known northern long-eared bat hibernacula.

- PennEast will work with the USFWS to conduct vibration, and/or temperature and humidity monitoring within subterranean features found at Tunnel 34 prior to, during, and after construction as long as landowner access continues to be granted.

- Prior to construction, PennEast will file with the FERC Secretary, for review and written approval by the Director of Office of Energy Projects, a list of locations by milepost where, in accordance with the BO, the USFWS is requiring tree clearing restrictions that are specifically applicable to federally listed bat species.

Bog Turtle

In the USFWS's BO, the USFWS concluded that an auger bore that is proposed under an occupied bog turtle wetland in Carbon County is not likely to adversely affect the species. However, other project sub-activities including use of vehicles and heavy machinery, impacts of sediment disturbance, watercourse crossings at tributaries that feed into bog turtle wetlands, rock blasting near bog turtle wetlands, access road, and tree/vegetation removal are likely to adversely affect the bog turtle. To minimize impacts to the species, PennEast will implement the following conservation measures:

- PennEast committed to avoid and minimize disturbance to wetlands with known or presumed bog turtle presence, wherever feasible, by deviation, workspace adjustment, or trenchless crossing method.
- A Recognized Qualified Bog Turtle Surveyor (RQBTS) will be employed prior to construction and during periods of active construction. The RQBTS will have the authority to stop work at any time. Work will cease immediately if a bog turtle is encountered at any time, and the USFWS will be immediately notified.
- If the RQBTS is on-site and determines that the proposed method of crossing a particular wetland will result in unanticipated impacts to bog turtles, given the wetlands site-specific characteristics or potential for bog turtle presence, the RQBTS will consult with PennEast and the USFWS immediately for further direction.
- Project contractors will receive site-specific environmental training related to the environmental review process, minimizing wetland impacts, species of concern, bog turtle habitat, and special protections for specific watershed areas (this is typically done by the RQBTS).
- Construction activities near areas that could support bog turtles will be confined by the installation of habitat exclusion barriers designed to keep turtles from entering the limit of disturbance outside of the

wetland. This barrier will consist of backfilled 24-inch-high silt fence without voids. This barrier will be installed manually under the supervision of a RQBTS, in areas of soft soils and muck, and by equipment in uplands and areas containing 3-18 inch firm soils. Habitat exclusion barriers will be removed by hand immediately upon completion of all construction activities.

- Prior to construction, a RQBTS will oversee hand-clearing and removal of vegetation along the access path, the installation of the habitat exclusion barrier, and the placement of timber matting within the habitat exclusion barrier.
- Timber mats and equipment will be either new or pressure-washed of free-standing soil and vegetative materials prior to arrival on-site. This minimizes the potential impacts that could occur from the introduction of invasive plants, contaminants, or bog turtle pathogens that can make their habitats unsuitable.
- Any matted wetland crossings will be completed in a manner that does not lower the water table or alter the hydrological characteristics of the wetland.
- Any HDD work proposed for crossing a wetland or watercourse with known, or presumed, bog turtle presence will take place outside of the winter hibernation months (October 15 to March 31), to avoid any potential subterranean disturbance that may occur during an inadvertent return of drilling fluid.
- At the known bog turtle wetland crossing in Carbon County, PA, PennEast will have a RQBTS on site before and during the auger bore installation, and PennEast will complete the crossing between April 1 and October 15, during a time when bog turtles are assumed to be active. This will avoid potential impacts to hibernating turtles at the crossing location.

The FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures) will be adhered to for all activities in wetlands, including but not limited to signage, restrictions on fueling activities and repairs, and wetland restoration measures. The RQBTS will forward the results of pre-construction surveys, construction monitoring, Project timelines, and photographic documentation of site restoration to the USFWS and FERC. The Service will be contacted immediately if bog turtles are observed or if take occurs.

Timber Rattlesnake

Portions of the Project in Carbon County are within the range of the timber rattlesnake. Surveys have been completed for this species. Avoidance and minimization measures for the timber rattlesnake will include the re-creation of impacted gestation habitat in accordance with PFBC guidelines and the avoidance of occupied dens.

Eastern Small-Footed Bat

PennEast has completed eastern small-footed bat surveys and coordination with the PGC. No occupied or presumed occupied habitat for the eastern small-footed bat is expected to be impacted.

Allegheny Woodrat

PennEast has completed Allegheny Woodrat surveys and coordination with PGC. No occupied or presumed occupied habitat for the Allegheny Woodrat is expected to be impacted.

Northern Flying Squirrel

Portions of the Project in Carbon County are within the range of the northern flying squirrel. This habitat is documented by the PGC and surveys are not needed. PennEast has developed a mitigation plan for this species, which was reviewed and approved by the PGC.

Northern Cricket Frog

PennEast has completed all habitat assessment surveys and coordination with PFBC. No impacts to this species are anticipated, and PFBC has completed their review of this species.

Pennsylvania Protected Plants

PennEast conducted rare plant surveys for targeted species. Individuals and/or populations of the following species were observed in Carbon County within or near the proposed workspace: variable sedge, northern panic grass, rough-leaved aster, thread rush, Appalachian climbing fern, golden club, white fringed orchid, and Torrey's bulrush.

PennEast will implement a Rare Plant Mitigation Plan that has been approved by the PADCNR. In this plan, PennEast committed to additional pre-construction surveys in the areas where rare plant populations were identified in surveys conducted 2015-2019. During these surveys, individual plants and/or the extents of population boundaries will be mapped. If any rare plants are observed within the proposed Project workspace, the avoidance, minimization, and mitigation measures that are outlined in the plan will be followed. Affected populations will be monitored for three growing seasons after construction.

Environmental Study Areas

Sanctuaries

As noted in Section S2.A.4 of Module 2, PennEast has determined there are no wildlife, bird, fish, or plant sanctuaries that would be crossed by the proposed Project in Carbon County; therefore, an evaluation of this resource was not provided.

Refuges

PennEast has determined there are no USFWS National Wildlife Refuges (NWRs) crossed by the proposed Project in Carbon County; therefore, an evaluation of this resource was not provided.

Other

The USFWS Pennsylvania Field Office did not identify any federal-owned or protected natural communities, including officially designated wilderness areas or wildlife preserves, or NWRs in the vicinity of the Project in Pennsylvania.

The Pennsylvania Natural Heritage Program (PNHP) recognizes "natural communities of special concern" and tracks the location of natural community types that are designated as NatureServe State rank

of S1 (critically imperiled), S2 (imperiled) or S3 (vulnerable) (PNHP, 2017). The PNHP has inventoried locations by county where plant species and natural communities of special concern have been documented as "Natural Areas." Based on the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review, the Project will not impact any designated Natural Areas.

S3.D.2(iv) Recreation Impacts

Section S3.B includes a summary table of federal, state, county and municipal public lands crossed by the Project facilities in Carbon County (Table CA-L3-5). The sections below provide a summary of the anticipated impacts associated with construction and operation of the Project across publicly available properties utilized for game and non-game hunting, fishing, hiking, wildlife viewing opportunities, other recreational uses and estimated impacts to properties located up and downstream of the Project in Carbon County.

Game Species

SGL No. 40 is crossed by the Project from at MP 25.0 to 25.8 in Carbon County, Pennsylvania, for a length of approximately 0.9 miles, SGL No. 129 is crossed by the Project beginning at MP 30.0R2 to 30.5R2 in Carbon County, Pennsylvania, for a length of approximately 0.5 miles, and SGL No. 168 is utilized for an access road for the Project. Hunting commonly occurs on SGL property and potentially may be conducted on other private properties crossed by the Project. Approximately 24.4 acres of lands associated with SGL 40, approximately 7.3 acres of lands associated with SGL 129, and approximately 0.6 acres of lands associated with SGL 168 will be affected by the construction of the Project in Carbon County. The Project does not cross any existing official trail systems associated with the SGL No. 40 or 129 (PGC 2018). To minimize impacts to forested locations, PennEast has sited the proposed pipeline adjacent to an existing pipeline ROW; therefore, only minor permanent impacts to forested habitats within the SGLs are anticipated as a result of tree clearing operations for the Project. Pipeline facilities across both SGLs will be installed via open cut excavation, as similar to other cross-country segments of the proposed Project. Following installation, ROW locations will be graded, seeded mulched and stabilized in accordance with PennEast's E&SCP (JPA Section M).

PennEast has minimized impacts to SGLs to the extent feasible through colocation of the Project within existing utility ROWs. Where impacts to forested locations cannot be avoided, PennEast is working with the PGC to identify suitable measures and timing restrictions to minimize disturbance to recreational and hunting areas and assess the appropriate mitigation and compensation measures for impacted lands.

Given the identified impacts to SGL properties, the number of privately own land tracts crossed by the Project and the extent of hunting that commonly occurs in Pennsylvania, installation of the Project facilities may result in short-term disturbances to hunting activities occurring on SGL or private property during periods of active construction. Considering the timeline and extent of the Project, it is anticipated that site activities have the potential to overlap with state-established seasons for specific game species and therefore may limit hunting opportunities in and within the vicinity of the ROW. PennEast will coordinate with affected landowners to minimize potential conflicts with hunting and will follow any work limitations provided by the landowners to the extent practicable. No impacts to populations of

game species or hunting opportunities will occur following completion of the Project, nor will operation of the Project facilities have any forthcoming impacts on hunting.

Non-Game Species

Non-consumptive wildlife recreation activities such as viewing, studying and photographing wildlife may be available within aquatic communities on numerous public properties crossed by the Project; however, the extent to which these activities occur on specific properties affected by the Project is unknown. Table CA-L3-5 in Section S3.B provides a summary of federal and state lands traversed by the Project in Carbon County. Temporary impacts related to the interruption of non-consumptive recreational wildlife activities may occur during construction of the Project, as standard health and safety protocols for pipeline construction prohibit access of non-Project personnel to the ROW during active construction. PennEast will coordinate with the affected land managing agencies to ensure the safety of the public and to confirm sufficient signage and public notice of construction activities is published. No impacts to non-consumptive recreational wildlife activities will occur following completion of the Project nor will operation of the Project facilities have any future impacts on wildlife viewing, studying or photographing during operation of the pipeline facilities.

Fishing

Watercourses supporting trout populations (either native or stocked) or providing trout habitat are afforded the following classifications by PFBC: ATW, Class A Trout Waters, Special Regulation Areas, Stream Sections that Support Natural Reproduction of Trout (including upstream tributaries), and Wilderness Trout Streams (WTS). ATW are those watercourses which contain segments open to public fishing and are stocked with trout (PFBC, 2018). Special Regulation Areas refers to anglers. Class A Trout Waters and stream sections that Support Natural Reproduction of Trout are defined as streams that support a population of naturally produced trout of sufficient size and abundance to support a long-term fishery; however, Class A streams are not stocked with trout. The Wilderness Trout stream designation is based on the provision of a wild trout fishing experience in a remote, natural and unspoiled environment (PFBC, 2018).

Trout-Stocked Fisheries in Pennsylvania are those fisheries that are managed by PFBC for the maintenance of stocked trout from March 1 through June 15 as well as for the maintenance and propagation of fish species and additional flora and fauna that are indigenous to coldwater habitats. Five ATW/STW and 55 WTW have been delineated and will be temporarily impacted by the Project in Carbon County.

The Lehigh River (Frances E. Walter Reservoir) is the only Pennsylvania navigable water that will be impacted by a dry, open cut crossing in Carbon County. PennEast has prepared an Aid to Navigation (ATON) Plan for the crossing, which has been submitted to the PFBC for review and approval. The ATON Plan is provided in Appendix CA-L-3D. The Lehigh River crossing would be constructed between mid-October and February, when boating and fishing at the crossing location are expected to be minimal. As shown in the ATON Plan, PennEast would provide portage around the construction workspace for non-motorized crafts. PennEast anticipates completing instream construction within 48 hours.

Similar to locations containing game and non-game resources, physical impacts to watercourses containing fishing opportunities will be short-term and limited to durations of active construction. PennEast will implement the watercourse crossing procedures identified in JPA Section S to minimize impacts during construction and ensure proper restoration of affected crossing locations. ATON Plans will be followed to allow continuous passage for boating and fishing where the Project crosses navigable waters. PennEast will also construct crossings in accordance with timelines provided by the PFBC, unless otherwise directly approved by the PFBC. As a result, significant impacts to watercourse crossing locations that provide recreational fishing are not expected to occur in Carbon County.

Hiking

The Project crosses public and conservation lands that provide opportunities for hiking in Carbon County. Most notably, properties associated with Beltzville and Hickory Run State Park. PennEast is working with PADCNR to minimize impacts to park visitors to the greatest extent possible. BMPs such as the use of specialized vegetation management methods and trenchless installation techniques will be employed to avoid direct impacts to trail systems. No direct impacts to trail systems are anticipated in Carbon County. As a result, no significant impacts to hiking opportunities are anticipated to occur in Carbon County.

Wildlife Observation

Recreational wildlife viewing opportunities may be available on numerous public properties crossed by the Project in Carbon County; however, the extent to which these activities occur on specific properties affected by construction is unknown. Installation of the pipeline facilities will result in the temporary disruption and displacement of resident and migratory wildlife species. Additionally, access by the public to the Project area will not be permitted during active construction, therefore, eliminating the opportunity for wildlife viewing. Following final restoration of the Project ROW, it is anticipated the affected species will return to the Project area and as a result, significant long-term impacts to public lands providing recreational wildlife viewing opportunities are not anticipated to occur in Carbon County.

Other Recreation Impacts

The public lands crossed by the Project in Carbon County are anticipated to provide a number of potential recreational activities, including biking, backpacking, camping, picnicking, horseback riding, canoeing, kayaking, boating, rafting, scenic drives, cross-country skiing and motorized vehicle use (i.e., all-terrain vehicles [ATVs], snowmobiles). However, the extent to which these activities are legally permitted to occur or the degree of recreational activity occurring within areas crossed by the Project is unknown.

Similar to the protocols and procedures detailed for properties providing hunting, hiking, fishing and wildlife viewing opportunities, PennEast will obtain all necessary approvals from the applicable land managing agencies to conduct site activities on public lands. PennEast will coordinate with agencies to ensure proper public notice is published in advance of construction activities and adequately posted at points of public access to ensure the safety of non-project personnel. PennEast will continue to work with agencies to identify suitable measures to minimize disturbance to the recreational area and its visitors.

S3.D.3 Subfacility Effect on Resource

The general nature of construction of pipeline projects is that it is temporary in nature. The open cut method allows pipelines to be installed in watercourses and wetlands in a short period of time, typically two days. During this time, topsoil is stockpiled and segregated during construction. The pipeline is then installed at a predetermined depth, backfilled to original contours, and completed by replacing the segregated topsoil Wetland seed mixture is applied to help promote restoration. Watercourse crossings are conducted "in the dry" as to not create sediment pollution in the watercourse. As a result, there is very minimal effect to the overall regime and ecology of the watercourse or wetland. Additionally, water quality, streamflow, fish and wildlife, aquatic habitat, and instream and downstream uses are minimally impacted. As a result, subfacilities CULV, FLACT, PIPE, TWPWI, WTDIM, WTIIM, and WETRE, will have very minimal effect on these environmental factors.

FLACT and CULV: Floodway impact and Culvert. These subfacilities are used for new culverts, culvert replacements, and associated floodway impacts. Within Carbon County, this subfacility is used for the installation of a new culvert and for the replacement of one existing culvert on access road AR-034. The culverts have been sized appropriately for the anticipated flow, as documented in Hydrology and Hydraulics Analysis Report in JPA Section N. Because the footprint of the new culvert at Kidder Compressor Station represents a minimal reach of the watercourse (impact of 0.03 acre), and the replacement of the culvert on AR-034 will be in kind, the impacts are not anticipated to affect the overall regime and ecology of the watercourses.

PIPE and TMPWI: Pipeline and Temporary Wetland Impact. These subfacilities are used for pipeline and associated workspace within the temporary and permanent ROW. The pipeline will be installed a minimum of five feet below each watercourse and three feet below each wetland.

Open-cut pipeline installation will be utilized for all of the proposed resource crossings, with the exception of areas where HDD installations or conventional bores are proposed. PennEast proposes to use dam and pump crossing techniques for all open-cut watercourse crossings, and downstream flows will be maintained by pumping water around the isolated workspace, thereby minimizing impacts to streamflow, fish and wildlife, aquatic habitat, and instream and downstream uses.

Permanent trench plugs will be installed at wetland and watercourse boundaries, and at intervals of 100 feet in larger wetland crossings, to restore pre-construction hydrology. After the pipeline is installed, native streambed material or wetland soils will be replaced, thus allowing disturbed features to return to original condition. Pre-construction contours will be restored, and watercourse and floodway cross-sectional areas will not be altered as a result of the pipeline installation. PennEast will seed wetlands and riparian areas with conservation seed mixes and replant temporarily impacted wetlands and forested riparian buffers with trees and shrubs. Additional restoration detail is provided in the Wetland and Riparian Reforestation Plan in JPA Section L4-A.

Although there may be temporary impacts during construction, the impacts are anticipated to be minor and short-lived. Watercourse crossings are generally completed in 24 to 48 hours, allowing

recovery of resources to begin rapidly. No processes or communities that are ecologically important to food chain production will be impacted for longer than one growing season as a result of the proposed Project.

These subfacilities are not anticipated to affect the overall regime and ecology of wetlands, watercourses, or floodways.

WTDIM: Wetland Direct Impact. This subfacility is used for all direct permanent wetland impacts. As discussed in Section S3.A.1 above, this type of impact is limited to permanent fill within PEM and PFO mosaic wetlands associated with the Kidder Compressor Station in Carbon County. PennEast will provide offsite wetland creation at a 1:1 ratio for PEM wetland fill and a wetland creation at a 2:1 ratio for PFO mosaic wetland fill to compensate for these impacts.

S3.D.4 Property and Riparian Rights

The construction and restoration BMPs identified for the Project are expected to provide adequate protection to wetlands, watercourses and their associated riparian corridors during installation of the pipeline facilities through restoration of the Project ROW. Temporary disturbances within riparian locations will be limited to short-term impacts to site-specific crossing areas that are not expected to result in significant modifications to the affected feature's water quality, quantity or velocity flows. The proposed Project will not result in the increase, diminution, or direction of flow; therefore, the property rights of landowners upstream, downstream, or adjacent to the Project would not be affected by the Project.

S3.E Antidegradation Analysis

The Antidegradation Analysis is attached as Appendix CA-L-3E.

S3.F Alternative Analysis

The Alternatives Analysis is provided in JPA Section S.

S3.G Secondary Impact Evaluation

As described under 25 Pa. Code Section 105.14, the review of applications by the PADEP requires a detailed assessment of the proposed activity with respect to its ability to demonstrate consistency and compliance with other applicable state and federal regulatory requirements, as well as an evaluation of the activity's potential impacts on multiple resources, including residual disturbances, resulting from secondary impacts. The criteria for determining the significance of indirect impacts is detailed under 25 Pa. Code Section 105.14(b)(12) as: *Secondary impacts associated with, but not the direct result of the construction or substantial modification of the dam or reservoir, water obstruction or encroachment in the area of the project and in areas adjacent thereto and future impacts associated with dams, water obstructions or encroachments, the construction of which would result in the need for additional dams, water obstructions or encroachments to fulfill the project purpose.*

When defining secondary impacts, the PADEP defers to the U.S. Environmental Protection Agency (USEPA) Regulations (40 Code of Federal Regulations [CFR] 230.11) which defines secondary (indirect) impacts as effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. As described throughout the application, PennEast has selected the proposed pipeline route to avoid and minimize effects to wetlands and watercourses to the greatest extent practicable. When impacts cannot be avoided, PennEast will implement the BMPs found in the E&SCP (JPA Section M) to minimize impacts during construction and to the extent practicable, return affected areas to their pre-construction condition during restoration. Reforestation of forested riparian buffers and PFO and PSS wetlands will enhance restoration, and offsite compensatory mitigation with further mitigate unavoidable impacts. PennEast will make every effort to contain Project impacts to the approved limit of disturbances; however, secondary impacts may also occur as a result of the Project. The following sections provide an overview of the Project's potential secondary impacts to aquatic areas, evaluating the possibility of indirect impacts to adjacent areas as well as potential future impacts on watercourses and wetlands.

Watercourses

Construction of the Project within Carbon County will result in 61 watercourse crossings. The sections below provide a summary of the potential secondary impacts to watercourses with a specific review of the Project's potential secondary affects to aquatic resources including aquatic habitats, riparian areas, water quantity and water quality.

Aquatic Habitat

Typical pipeline installation activities across watercourses will involve the clearing of vegetation and the excavation of the watercourse banks and beds following the installation of the selected conventional dry-ditch construction crossing method. PennEast will implement their E&SCP (JPA Section M) at all watercourse locations to ensure crossings are conducted in the "dry," adequate downstream flows are maintained during instream work via the installed watercourse bypass systems and disturbed segments of the watercourse are restored to their pre-construction condition. PennEast's E&SCP (JPA Section M) will be utilized to minimize the potential for secondary impacts resulting from construction; however, in some instances, residual disturbances to aquatic resources may be unavoidable.

Clearing of the proposed ROW is expected to result in disruptions related to noise from construction equipment as well as noise from the removal of vegetation. Potential secondary impacts to adjacent locations resulting from the removal of vegetation over watercourse areas include the displacement of wildlife that is utilizing areas for nesting, spawning, rearing, resting, migration, feeding and escape cover. Secondary impacts resulting from clearing activities will be partially mitigated through adherence to the MBTA timing restrictions for clearing operations that have been identified by the USFWS as well as PFBC timing restriction for trout fisheries, unless otherwise approved by PFBC. Secondary impacts to adjacent areas that cannot be mitigated through implementation of seasonal clearing timing restriction are anticipated to be short-term in nature, as impacted ROW locations will be revegetated and allowed to revert to their pre-existing condition. Additionally, post-construction disturbances to the construction ROW that have the potential to affect adjacent locations will be limited to the periodic maintenance of

vegetation (i.e., mowing) which will be conducted in accordance with PennEast's post-construction ROW maintenance plan. The general procedures contained within the plan include the following provisions:

- Routine vegetation mowing or clearing practices adjacent to watercourses will consist of maintaining a riparian strip that measures 25 feet back from the mean high-water mark. This riparian area will be allowed to permanently revegetate with native plant species across the entire ROW;
- Routine vegetation mowing or clearing over the full width of the ROW in wetlands is prohibited;
- To facilitate periodic corrosion and leak surveys at wetlands and watercourses, a 10-foot wide corridor centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. Trees and shrubs that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the ROW. Do not conduct any routine vegetation mowing or clearing in riparian areas that are between HDD entry and exit points;
- Herbicides or pesticides will not be sprayed anywhere along the maintained permanent ROW; and
- In no case shall routine vegetation mowing or clearing occur during the migratory bird nesting season between April 15 and August 1 of any year unless specifically approved in writing by the responsible land management agency or the USFWS.

Similar to clearing operations, noise associated with earth disturbance activities within the proposed ROW has the potential to disrupt adjacent wildlife; therefore, temporarily affecting a number of critical ecological functions within the general Project area. Adjacent impacts related to the displacement of wildlife will be minimal and limited to the duration of active construction. Additional secondary impacts related to surface disturbances that have the possibility to occur include the drift of sediments or silt-laden material from the disturbed construction ROW, downstream to adjacent aquatic communities. The sedimentation of watercourses has the ability to affect numerous ecological functions, specifically activities related to feeding and spawning. To some degree, sedimentation of adjacent downstream watercourse locations may be unavoidable during specific phases of construction; however, PennEast will utilize the construction and restoration BMPs found in the E&SCP (JPA Section M) to limit disturbances until restoration is complete. Silt-laden material may drift from the watercourse crossing location immediately following the installation of the watercourse bypass system or directly following the return of natural watercourse flow within the restored channel. Additional sources of sedimentation may include suspended sediments resulting from frequent equipment travel over or adjacent to watercourse crossing locations during periods of surface saturation, as well as the drift of material originating from failed or overburdened soil erosion and sediment control devices installed within the ROW. To minimize the potential of secondary impacts to spawning activities as well as other ecological functions, PennEast has committed to the installation of pipeline facilities during the allowable instream construction period identified by the PFBC, unless otherwise approved by the PFBC. Additionally, all watercourse crossing locations with exception of the Susquehanna River will be completed within 24 to 48 hours to limit the duration of disturbance. Several restoration BMPs will be installed at each crossing location to ensure revegetation of the adjacent locations and proper restoration of the affected watercourse channel.

Riparian Areas

Riparian areas associated with watercourses provide multiple functions associated with the overall quality of a watercourse. During high-flow and flood events, riparian areas provide protection to watercourse banks while also minimizing flow velocities and erosive forces caused by increased flow velocities. Additionally, riparian areas aid in the retention of excess sediment, provide nutrient removal, and offer both terrestrial and aquatic habitat. While herbaceous riparian buffers offer the benefits of decreasing floodwater velocities, sediment retention, and nutrient removal, forested and scrub-shrub riparian buffers additionally offer woody debris, greater terrestrial and aquatic habitat quality, and overhead cover. These additional benefits result in an overall higher water quality for the watercourses associated with forested and scrub-shrub riparian buffers. As such, PennEast has performed the following riparian buffer evaluations and will implement the specific measures outlined below to reduce the extent and duration of impacts to riparian buffers within the Project limits. As a result, no secondary impacts to the surrounding riparian areas are anticipated to occur.

PennEast has completed an evaluation of riparian areas associated with each proposed watercourse crossing in Carbon County based on the PADEP Rapid Assessment Protocol (RAP) procedure. This approach combines a desktop and field assessment of the riparian vegetation condition at each watercourse crossing. In addition to the vegetation evaluation, the RAP procedure included an assessment of the channel and floodplain, instream habitat, and channel alteration for each watercourse. A condition category was then assigned for each evaluated watercourse characteristic and the results were recorded on the PADEP Riverine Assessment Form 1. The results of the watercourse RAP evaluations can be found in Module 2. The recorded data will be used as a baseline by PennEast to evaluate the effectiveness of post-construction restoration for each crossed watercourse and will serve to minimize impacts to each watercourse and the surrounding riparian areas.

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. In order to minimize these temporary disturbances, PennEast has employed multiple measures to reduce the extent and duration of Project impacts to riparian communities which include, but are not limited to:

- The siting of Project facilities within areas classified as open, agricultural, commercial/industrial, and residential land (26% within Carbon County) to avoid the clearing of forested upland and wetlands;
- The co-location of the Project facilities with existing road and utility ROWs (56% within Carbon County) to reduce clearing of riparian communities;
- The reduction of Project workspace within wetlands and across watercourses to limit clearing and surface disturbances;
- Limiting 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;

- Utilization of the identified erosion control devices, BMPs and revegetation procedures to restore riparian communities following pipeline installation; and
- Limiting the width of the permanent maintained ROW to locations 10 feet in width centered over the pipe in herbaceous and/or scrub-shrub wetlands and 30 feet centered over the pipe in forested wetlands. The remaining locations will be allowed to revert back to their preconstruction land use/condition.

As a result of performing the riparian area evaluations and implementing the above measures, PennEast will avoid and minimize impacts to forested and scrub-shrub riparian areas, to the greatest extent practicable, within the limits of the Project. By minimizing impacts to riparian buffers within the Project limits, no secondary impacts to the surrounding riparian areas are anticipated to occur.

Water Quantity

Construction of the proposed Project is estimated to have no significant long-term effect on water quantity within the Project area. As a result, the potential for significant secondary effects to water quantity resulting from Project activities are perceived to be low. Potential short-term secondary impacts to water quantity could result from the following:

- A reduction or increase of hydrology to adjacent areas resulting from temporary alterations of the natural drainage patterns within the ROW;
- Possible temporary changes to the watercourse's flow velocities, volumes and flow patterns in response to the immediate installation of the watercourse bypass system or during the decommissioning of the installed system; therefore, resulting in secondary effects to upstream and downstream watercourse locations;
- Conceivable short-term fluctuations in the local groundwater supply altering the discharge or recharge abilities for both local and adjacent surface water sources;
- The consumptive use of water supply volumes from surface water resources to conduct hydrostatic testing of the pipeline as well as trenchless crossings and dust control measures, resulting in potential changes in available surface water volumes or elevations; and
- The temporary increase in watercourse hydrology and flow resulting from the discharge of water supply volumes following hydrostatic testing operations.

As mitigation for the potential direct and indirect secondary impacts to water quantities, PennEast will employ the construction and restoration measures found in the E&SCP (JPA Section M). Any secondary impacts to the local watercourse hydrology are expected to be short-term in nature, as post-construction ROW conditions will be revegetated and restored to pre-existing contours and elevations, thus allowing the return of natural drainage patterns to the affected Project areas.

Possible secondary impacts to upstream or downstream flow velocities, volumes or flow patterns resulting from the installation or removal of watercourse bypass systems will be limited to the duration of the physical instream construction crossing (24 to 48 hours). All natural flow conditions will be returned

to pre-construction condition following the restoration of the affected watercourse channel, and therefore, secondary impacts will be resolved shortly after restoration of the watercourse crossing.

Possible short-term fluctuations in the adjacent groundwater supply resulting from trenching or trench-dewatering operations will also be limited to the duration of active open trench construction. PennEast will employ BMPs such as the use of trench plugs at watercourse crossing locations and will utilize dewatering filtration devices such that potential effects to adjacent groundwater resources are minimize during construction and unaffected during operation of the Project.

The consumptive use of water supply volumes for hydrostatic test water dust control measures and trenchless operations that may result in secondary effects to surface water elevations and flow characteristics will be managed and mitigated through receipt of water withdrawal and discharge permits from the Delaware River Basin Commission (DRBC) and the PADEP. Additionally, any secondary impacts that occur as a result of withdrawal and discharge applications will be localized and short-term in nature, such that long-term secondary effects to water quantity would not occur.

Water Quality

Secondary impacts related to the loss of water quality to adjacent locations have the opportunity to occur during construction and restoration of the Project. Surface disturbances related to grading and excavation activities expose soils, resulting in the increased potential for sediment and silt transport during storm events to surface water systems. Trench dewatering operations also provide the opportunity for the release of silt-laden water to unaffected adjacent locations, which could result in the overland flow to undisturbed watercourses. Additional sources of turbidity that may also result in secondary impacts include the generation of silt-laden material immediately following the installation of the watercourse crossing/bypass system or directly following the decommissioning of the equipment crossing or return of natural watercourse flow within the restored channel. Frequent equipment travel over or adjacent to watercourse crossing locations during periods of precipitation, along with the potential release of suspended sediments from failed or overburdened structural or non-structural soil erosion and sediment control devices also have the potential to affect the water quality of adjacent surface water systems. The accidental release of hazardous chemicals during refueling operations, the failure of equipment hydraulics or lubricant systems, and the inadvertent release of drilling fluids during trenchless crossings also possess the ability to result in secondary impacts to water quality. Lastly, until permanent stabilization of watercourse crossing locations is achieved, the post-construction condition of the restored watercourse banks may be subject to subsidence or erosion following high flow events, thus leading to the transport of eroded bank material downstream.

As mitigation for the potential direct and indirect secondary impacts to water quality, PennEast will employ the construction and restoration measures found in the E&SCP (JPA Section M). BMPs such as the use of compost filter socks, limiting the removal of stumps, temporary seeding, straw bales and mulch, and temporary trench plugs and waterbars will be employed during construction activities to minimize disturbances resulting from earthwork adjacent to watercourses. During final restoration of the ROW, surface contours and pre-existing surface elevations will be returned to the greatest extent practicable, and permanent BMPs and revegetation protocols will be implemented such that secondary effects resulting in water quality impacts to adjacent resources are not anticipated to be significant.

Given the depths necessary to install the pipeline, the likelihood of trench dewatering occurring within areas that are adjacent to unaffected surface water resources is relatively high. PennEast will follow the protocols detailed in the E&SCP (JPA Section M) to confirm that trench water is properly discharged to energy dissipation/sediment filtration devices, such as geotextile filter bags or straw bale structures that are situated in vegetated locations, away from surface waters to prevent silt-laden water from flowing into adjacent surface water locations.

As noted above, silt-laden material may drift from the watercourse crossing location immediately following the installation of the watercourse bypass system or directly following the return of the natural watercourse flow within the restored channel. BMPs such as the use of siltation curtains and the return of native watercourse substrate to the affected crossing area will be employed to minimize impacts to downstream locations. Secondary impacts resulting from these activities that could affect adjacent surface water systems are anticipated to be localized and short-term in nature, such that overall turbidity levels are insignificant, and no significant loss of water quality occurs.

The release of turbid waters or silt-laden material off the ROW to unaffected adjacent resources due to failed or overburdened erosion and sediment control devices has the potential to occur during construction and restoration of the Project. To minimize the potential of this occurrence, PennEast will ensure EIs are present during the installation of erosion and sediment control devices so that BMPs are installed per E&SCP requirements. Installed BMPs will be subject to period inspections by EIs prior to the notification of a significant storm event, daily in areas of active construction and subsequent to snow melt or precipitation events to verify proper function and protection to resources until permanent stabilization is achieved.

To minimize the potential of secondary effects to water quality resulting from the release of hazardous materials, PennEast will maintain a minimum 100-foot buffer from wetlands and watercourses to refuel vehicles, store or transfer liquid hazardous materials, and coat pipeline segments with concrete, unless otherwise approved by the EI and secondary containment is implemented. PennEast's PPC Plan (Appendix CA-L-3B) will be implemented throughout the duration of the Project to reduce risks of spills or leaks to the ground or watercourse surface and to provide the necessary mitigation measure to properly contain, cleanup and document a spill. Secondary impacts resulting from the inadvertent release of drilling fluids to adjacent surface waters will be managed and mitigated through employment of HDD Inadvertent Returns and Contingency Plan (Appendix CA-L-3C). This plan establishes the operational procedures and responsibilities for the prevention, containment and clean-up of drilling fluids in the event a release occurs to the ground surface or within a watercourse during trenchless operations.

Until permanent restoration is achieved, the post-construction condition of the restored watercourse crossings may be susceptible to subsidence or erosion following flooding events, human related disturbances such as unauthorized All-Terrain Vehicles (ATV) activity or agricultural impacts from livestock movement or the passage of farm equipment. Significant erosion could lead to the degradation of the watercourse bank and the transport of eroded materials downstream. In accordance with federal and state requirements, PennEast will conduct post-construction monitoring of the restored ROW, with specific focus on the revegetation and stabilization efforts following installation of the Project facilities. Overall ROW monitoring will occur during the growing season for a minimum of 3 years. Impacted wetland and watercourses will be monitored for five growing seasons after construction completion.

Wetland and watercourse locations failing to meet the federal or state restoration standards or locations in need of immediate remedial actions will be identified during ROW monitoring surveys and corrected accordingly. All post-construction monitoring reports documenting the success, failures and restoration efforts will be submitted to the applicable federal and state agencies at the end of each monitoring period for review and comment.

Wetlands

Construction of the Project within Carbon County will result in 59 wetland crossings. The sections below provide a summary of the potential secondary impacts to wetlands with a specific review of the Project's potential secondary effects to aquatic resources including aquatic habitats, water quantity and water quality.

Aquatic Habitat

Similar to the analysis provided in Section S3.D.2(iii) above, installation of the proposed Project may result in temporary secondary impacts to adjacent aquatic environments. Standard pipeline installation activities across wetlands will involve the clearing of vegetation with the installation of equipment mats, the removal of topsoil over the identified trench line following by the excavation of subsoil to allow for the installation of the pipe. Following installation of the pipeline, the affected locations are backfilled, graded and stabilized. PennEast will implement their E&SCP (JPA Section M) at all wetland locations to ensure wetland crossings are "isolated" via use of the designated soil erosion and sediment controls. Disturbed wetland areas are contained and restored to their pre-construction condition. PennEast's E&SCP will be utilized to minimize the potential for secondary impacts resulting from construction; however, in some instances, residual disturbances to adjacent aquatic resources may be unavoidable.

Noise disturbances associated with clearing of the proposed ROW have the potential to result in secondary impacts related to the immediate displacement of wildlife that is utilizing adjacent locations for nesting, spawning, rearing, resting, migration, feeding or escape cover. The temporary loss of vegetative cover during active construction or the successional redevelopment of the ROW following the completion of work, may also have secondary residual effects to migratory or resident wildlife species. Wildlife that may have occupied the affected aquatic environment due to specific species composition or vegetation densities may relocate from the general Project area due to the loss of specific habitat needs. The temporary loss of vegetation within the construction corridor may also result in secondary impacts to the local food chain production, as the loss of producers within the affected ROW may result in the forced relocation of primary and secondary consumers that were previously occupying adjacent aquatic communities. Impacts resulting in the alteration of species composition from the unintentional introduction of invasive plant species also have the potential to occur during construction. Construction equipment and materials that are not properly cleaned after working in locations populated with invasive vegetation have the potential to spread seeds, roots, or other viable invasive plant materials to locations free of non-native plant species. The colonization of invasive vegetation can result in numerous ecological effects to aquatic environments resulting in permanent impacts to specific habitat functions if infestations are not controlled.

As discussed throughout Module 3, primary and secondary impacts resulting from clearing activities within aquatic habitats will be temporary in nature, as permanent revegetation of the impacted aquatic communities will occur immediately following restoration of the workspace. Wetlands comprised of emergent or scrub-shrub cover types are expected to quickly recover from temporary alterations. Wetland systems composed of forested communities will be allowed to revert to their original site condition (excluding locations maintained for line of sight), however, it is anticipated that complete re-establishment will take several years to occur. Volunteer species from unaffected adjacent habitats are anticipated to aid in the revegetation process and therefore, contribute to the return of previously impacted habitat functions.

Secondary impacts resulting from the removal of vegetation will be partially mitigated through adherence of the timing restrictions associated with the MBTA as well as clearing restrictions identified by the USFWS for sensitive bat species. Additionally, post-construction disturbances to the construction ROW that have the potential to affect adjacent locations will be limited to the periodic maintenance of vegetation (i.e., mowing) which will be conducted in accordance with PennEast's post-construction ROW maintenance plan. Secondary impacts involving the establishment of invasive plant species will be mitigated through employment of PennEast's Invasive Species Management Plan [(ISMP), Appendix CA-L-3I]. The BMPs and procedures contained within the ISMP will be implemented during all phases of construction. Requirements of the ISMP will be identified to contractors during the required preconstruction environmental training and education will include:

- The identification of invasive plant species and locations along the ROW that contain invasive vegetation;
- Procedures for working in areas populated with invasive plants;
- Approved methods for cleaning materials and equipment prior to demobilizing from locations colonized with invasive plant species; and
- Monitoring procedures and (if necessary) control measures to ensure restored ROW locations do not become dominated by invasive plant species.

Similar to the discussion provided above, noise associated with earth disturbance activities within the proposed ROW has the potential to disrupt adjacent wildlife, therefore temporarily affecting a number of critical ecological functions within the general Project area as detailed in the sections above. Additional secondary impacts related to surface disturbances include the transport of sediments or silt-laden material from the disturbed construction ROW, downgradient to unaffected aquatic communities. The sedimentation of wetlands has the ability to affect numerous ecological functions, including the alteration of substrate, which can lead to the modification of species composition and vegetation densities, resulting in negative effects to other ecological functions. Additional sources of sedimentation may include suspended sediments resulting from frequent equipment travel over wetland crossing locations during periods of surface saturation, as well as the transport of material originating from a failed or overburdened soil erosion and sediment control device installed within the ROW. To minimize the potential of secondary impacts to the ecological functions found in adjacent communities, PennEast will implement the BMPs found in the E&SCP (JPA Section M). BMPs such as the use of compost filter sock, the segregation of topsoil, the use of temporary seeding, straw mulch and bales and temporary trench plugs and waterbars will be employed during construction activities to minimize disturbances resulting from

earthwork within and adjacent to wetlands. During final restoration of the ROW, surface contours and pre-existing surface elevations will be returned and permanent BMPs and revegetation protocols will be implemented such that secondary effects resulting in discharge of sediments to adjacent resources are not anticipated to be significant.

Water Quantity

As discussed above, construction of the proposed Project is estimated to have no significant long-term effects on water quantity within the Project area. As a result, the potential for significant secondary effects to water quantity resulting from Project activities are perceived to be low. Potential short-term secondary impacts to the water quantity of adjacent wetland areas could result from the following:

- A reduction or increase in hydrology to adjacent areas resulting from temporary alterations of the natural drainage patterns of up-gradient locations within the active construction corridor;
- Possible temporary alterations in the wetlands drainage patterns as a result of open cut trenching operations or trench dewatering activities, potentially resulting in secondary effects to downgradient segments of the wetland community;
- Potential compaction of soils from the use of heavy construction equipment or the temporary storage of trench spoils resulting in the loss of local groundwater recharge and infiltration capabilities; and
- Conceivable short-term fluctuations in the local groundwater supply altering the discharge or recharge abilities for both local and adjacent aquatic communities

As mitigation for the potential direct and indirect secondary impacts to water quantities PennEast will employ the construction and restoration measures found in the E&SCP (JPA Section M). Secondary impacts to adjacent wetland hydrology occurring as a result of the increase or decrease of the available upgradient contributing drainage area are expected to be short-term in nature, as post-construction ROW conditions will be revegetated and restored to pre-existing contours and elevations, thus allowing the return of natural drainage patterns to the affected Project areas.

Possible secondary impacts to drainage patterns within wetland areas that are downgradient of the construction ROW could result from open cut trenching or dewatering operations, but these impacts will be limited to the physical duration of open trench construction. All natural drainage contours will be returned to pre-construction condition following the restoration of the affected wetland crossing, therefore significant long-term affects to surface drainage patterns are not expected to occur.

To reduce the potential of soil rutting and compaction within saturated locations, PennEast will utilize equipment mats when working in wetland areas to aid in the distribution of weight and reduce the potential need for soil decompaction during restoration of the Project workspace. The segregation of topsoil within the trench line of wetland locations will also limit the potential for soil compaction. The replacement of topsoil to the original soil horizons and elevations will promote the return of native vegetation along with the return of natural groundwater direction and flow rates. Soil compaction concerns that are not mitigated through use of the BMPs described above will be addressed during decompaction procedures during the final cleanup and restoration phases of the Project.

Possible short-term fluctuations in the adjacent groundwater supply resulting from trenching or trench-dewatering operations will also be limited to the duration of active open trench construction. PennEast will employ BMPs such as the use of trench plugs at wetland crossing locations and will utilize dewatering filtration devices such that potential effects to adjacent groundwater resources are minimize during construction and unaffected during operation of the Project.

Water Quality

As noted in Section S3.D.2(ii) above, secondary impacts related to the loss of water quality to adjacent wetland locations have the opportunity to occur during construction and restoration of the Project. Surface disturbances from equipment use during clearing, grading and excavation activities remove vegetation and expose soils resulting in the increased potential for sediment and silt transport during storm events to downgradient adjacent wetland communities. Trench dewatering operations could also result in the release of silt-laden water to unaffected adjacent locations, potentially leading to the overland flow of turbid waters to undisturbed wetland communities. Additional sources of turbidity that may also result in secondary impacts include the generation of silt-laden material from the installation, use or removal of equipment crossings, specifically during periods of precipitation, along with the potential release of suspended sediments from failed or overburdened soil erosion and sediment control devices. The accidental release of hazardous chemicals during refueling operations, the failure of equipment hydraulics or lubricant systems and the inadvertent release of drilling fluids during trenchless crossings also provide the opportunity for secondary impacts to water quality within adjacent wetlands. In addition, until permanent stabilization and revegetation of the affected wetland locations is achieved, the post-construction condition of the restored wetland areas may be subject to erosion resulting from flooding events, human related disturbances, such as unauthorized ATV activity or agricultural impacts related to livestock movement or the passage of farm equipment.

As mitigation for the potential direct and indirect secondary impacts to water quality from earth disturbance activities, PennEast will employ the construction and restoration measures found in the E&SCP (JPA Section M). Temporary BMPs such as the use of compost filter socks, diversion swales, trench breakers and waterbars will be installed to minimize the potential for upgradient areas to discharge to downgradient or adjacent to wetland communities. During final restoration of the ROW, surface contours and pre-existing surface elevations will be returned and permanent BMPs and revegetation protocols will be implemented, such that secondary effects to water quality resulting from earth disturbances activities are minimized to the extent practicable.

To reduce the possible secondary effects trench dewatering activities may have on adjacent aquatic communities, PennEast will follow the protocols detailed in the E&SCP (JPA Section M) to minimize the potential release of turbid waters to adjacent aquatic resources. Trench dewatering activities will be conducted under the direct supervision of the on-site EI to confirm that trench water is being properly discharged to energy dissipation/sediment filtration devices, such as geotextile filter bags or straw bale structures. Receiving structures will be secured in upland vegetated locations, away from wetlands and surface water systems to prevent silt-laden water from flowing into adjacent wetland communities. As a result, significant adjacent impacts from trench dewatering activities are not anticipated to occur.

As noted above, silt-laden material may appear along equipment crossings during installation, use and removal. Minor adjacent disturbances have the potential to occur as a result of the following:

- The removal of rocks or stumps to level travel ways during installation or the grading of previously imbedded equipment mat locations following use;
- The "pumping" of substrate during or subsequent to travel by heavy equipment during saturated site conditions; and
- The settling or flushing-out of tracked mud and sediments from the equipment mats following rain events.

PennEast will implement the necessary BMPs such as the use of additional erosion control measures, the periodic cleaning of equipment mats, and the grading and stabilizing of impacted locations following use. Secondary impacts resulting from these activities that could affect adjacent surface water systems are anticipated to be localized and short-term in nature, such that overall turbidity levels are insignificant, and no substantial loss of water quality occurs.

The release of turbid waters or silt-laden material off the ROW to unaffected adjacent resources due to failed or overburdened erosion and sediment control devices have the potential to occur during construction and restoration of the Project. To minimize the potential of this occurrence, PennEast will ensure EIs are present during the installation of erosion and sediment control devices so that BMPs are installed per E&SCP requirements. Installed BMPs will be subject to periodic inspections by EIs prior to a significant storm event, daily in areas of active construction and subsequent to snow melt or precipitation events to verify proper function and protection to resources until permanent stabilization is achieved.

To minimize the potential of secondary effects to water quality resulting from the release of hazardous materials, PennEast will maintain a minimum 100-foot buffer from wetlands to refuel vehicles, store or transfer liquid hazardous materials, and conduct concrete coating activities, unless otherwise approved by the EI and secondary containment is implemented. PennEast's PPC Plan (Appendix CA-L-3B) will be implemented throughout the duration of the Project to reduce risks of spills or leaks to surface locations and to provide the necessary mitigation measure to properly contain, cleanup and document a spill. Secondary impacts resulting from the inadvertent release of drilling fluids to adjacent surface waters will be managed and mitigated through employment of PennEast's HDD Inadvertent Returns and Contingency Plan (Appendix CA-L-3C). This plan establishes the operational procedures and responsibilities for the prevention, containment, and clean-up of drilling fluids in the event a release occurs to the ground surface within a watercourse, wetland, or an upland location during trenchless operations.

Until permanent revegetation of affected wetland areas is achieved, the post-construction condition of the restored wetland crossings may be susceptible to erosion following flooding events, human related disturbances such as unauthorized ATV activity or agricultural impacts from livestock movement or the passage of farm equipment. Significant erosion could lead to the degradation of restored wetlands resulting in the loss of topsoil, change in vegetation densities or species composition or the colonization of invasive species. In accordance with federal and state requirements, PennEast will conduct post-construction monitoring of the restored ROW, with specific focus on the revegetation and stabilization efforts following installation of the Project facilities. Overall ROW monitoring will occur once annually

during the growing season for a minimum of 3 years. Impacted wetland and watercourses will be monitored for five growing seasons after construction completion. Wetland and watercourse locations failing to meet the federal or state restoration standards, or locations in need of immediate remedial actions, will be identified during ROW monitoring surveys and corrected accordingly. For the purposes of this Project, restoration areas will be considered successful when the following criteria have been met:

- The affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology and vegetation);
- Vegetation is 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;
- If natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and
- Invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction of the Project.

All post-construction monitoring reports documenting the success, failures and restoration efforts will be submitted to the applicable federal and state agencies at the end of each monitoring period for review and comment.

S3.H Cumulative Impact Analysis

The Cumulative Impact Analysis is attached as Appendix CA-L-3F.

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